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CFETP 2E2X1  
Parts I and II  
1 November 2001

# **AFSC 2E2X1**

# **COMPUTER, NETWORK, SWITCHING AND CRYPTOGRAPHIC SYSTEMS**



# **CAREER FIELD EDUCATION AND TRAINING PLAN**

**COMPUTER, NETWORK, SWITCHING AND CRYPTOGRAPHIC SYSTEMS  
AFSC 2E2X1  
CAREER FIELD EDUCATION AND TRAINING PLAN**

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**PART I**

***Preface***

1. Resource constraints in the Air Force are impacting the availability of our most valuable resource--people. This condition, which will continue to exist in the future, makes it essential for the work force to be effectively and efficiently trained to perform duties within each skill level of an Air Force Specialty (AFS). To meet the challenges of tomorrow the Air Force must place a greater emphasis on career field training. This Career Field Education and Training Plan (CFETP) is a management tool that enables the Air Force and each MAJCOM to place the needed emphasis on total career field training. It provides the framework and guidance necessary to plan and develop a career field training program. The plan, which is a "training road map" for the career field, identifies mandatory and optional training requirements. It includes initial skills, upgrade, and continuation training that individuals should receive during their career in this specialty.
2. The CFETP, which documents the career field training program, consists of two parts. Management uses both parts to plan, manage, and control training within the career field.
  - 2.1. Part I, Section A, provides the information necessary for overall management of training in the career field. It contains administrative details and explains the purpose and use of the CFETP. Section B provides a description of the specialty, suggests career field progression, provides career field information, documents training decisions, defines each skill level, and identifies MAJCOM continuation training options. Section C specifies qualification requirements for upgrade/progression in each subsequent skill level in the career field. It also identifies sources of training other than those provided by the Air Education and Training Command (AETC). Section D identifies known resource constraints.
  - 2.2. Part II of the CFETP contains the Specialty Training Standard (STS) and identifies the various training sources and courses available to members of the specialty. The STS is comprised of the Course Training Standard (CTS) and the Career Training Guide (CTG). The CTS includes the tasks and knowledge requirements for award of the three skill level. The CTG includes task and knowledge requirements for upgrade/progression to subsequent skill levels in the career field and identifies career development course (CDC) subject content. Supervisors and trainers at the unit level use Part I, Section C, and Part II of the CFETP to identify, plan, and conduct unit level training commensurate with the overall goals of this plan.
3. Use of the guidance provided in this CFETP ensures individuals in this career field receive effective and efficient training at the appropriate points in their careers. This plan enables the Air Force to train today's work force for tomorrow's jobs.

## **Abbreviations/Terms Explained**

This section provides a common understanding of the terms that apply to the Computer, Network, Switching and Cryptographic Systems Career Field and Education Training Plan.

**Advanced Training.** A formal course of training that leads to a technical or supervisory level of an AFS. Training is for selected airmen at the advanced level of an AFS.

### **Air Education Training Command (AETC).**

**Air Force Career Field Manager (AFCFM).** Representative appointed by the respective HQ USAF Deputy Chief of Staff or Under Secretariat to ensure that assigned AF specialties are trained and utilized to support AF mission requirements.

**Air Force Institute for Advanced Distributed Learning (AFIADL).** The result of a merger between the Air Force Distance Learning Office and the Extension Course Institute (ECI).

**Air Force Job Qualification Standard (AFJQS).** A comprehensive task list that describes a particular job type or duty position. Supervisors use the AFJQS to document task qualification. The tasks on AFJQSs are common to all persons serving in the described duty position.

**Air Force Qualification Training Package (AFQTP).** An instructional course designed for use at the unit to qualify or aid qualification in a duty position, program, or on a piece of equipment. It may be printed, computer-based, or other audiovisual media.

**Air Force Specialty (AFS).** A group of positions (with the same title and code) that require common qualifications.

**Career Field Education and Training Plan (CFETP).** A comprehensive, multipurpose document, that encapsulates the entire spectrum of career field training. It outlines a logical growth plan that includes training resources and is designed to make career field training identifiable, eliminate duplication, and is budget defensible. CFETPs are officially posted [at http://afpubs.hq.af.mil/](http://afpubs.hq.af.mil/). You can also download them from <http://www.il.hq.af.mil/ilm/ilmm/cemaint/index.html> or <https://wwwmil.keesler.af.mil/81trss/qflight/welcome.html>.

**Career Training Guide (CTG).** A document that uses Task Modules (TM) in lieu of tasks to define performance and training requirements for a career field.

**Certifying Official.** A person assigned by the commander to determine an individual's ability to perform a task to the required standard.

**Computer Based Training (CBT).** A forum for training in which the student learns via a computer terminal. It is an especially effective training tool that allows the students to practice applications while they learn.

**Continuation Training.** Additional advanced training that exceeds the minimum upgrade training requirements and emphasizes present or future duty assignments.

**Core Task.** A task Air Force Career Field Managers (AFCFM) identify as a minimum qualification requirement within an AFSC or duty position.

**Course Training Standard (CTS).** A standard developed for all courses not governed by an STS, including specialized training packages and computer-based training courses.

**Enlisted Specialty Training (EST).** A mix of formal training (technical school) and informal training (on-the-job) to qualify and upgrade airmen in each skill level of a specialty.

**Exportable Training.** Additional training via computer assisted, paper text, interactive video, or other necessary means to supplement training.

**Go/No Go.** In OJT, it is the stage at which an individual has gained enough skill, knowledge, and experience to perform a task without supervision.

**Initial Skills Training.** A formal resident course resulting in award of the 3-skill level.

**Instructional System Development (ISD).** A deliberate and orderly (but flexible) process for planning, developing, implementing, and managing instructional systems. It ensures personnel are taught in a cost efficient way the knowledge, skills, and attitudes essential for successful job performance.

**Major Command (MAJCOM).**

**Occupational Survey Report (OSR).** A detailed report showing the results of an occupational survey of tasks performed within a particular AFSC.

**On-the-Job Training (OJT).** Hands-on, over-the-shoulder training conducted to certify personnel in both upgrade (skill level award) and job qualification (duty position certification) training.

**Qualification Training.** Actual hands-on, task performance based training designed to qualify airmen in a specific duty position. This training program occurs both during and after the upgrade training process and is designed to provide skills training required to do the job.

**Resource Constraints.** Resource deficiencies (such as money, facilities, time, manpower, and equipment) that preclude desired training from being delivered.

**Skill Training.** A formal course that results in the award of a skill level.

**Specialty Training Package and COMSEC Qualification Training Package.** A composite of lesson plans, test material, instructions, policy, doctrine, and procedures necessary to conduct training. These packages are prepared by AETC, approved by National Security Agency (NSA), and administered by qualified communications security (COMSEC) maintenance personnel.

**Specialty Training Standard (STS).** An Air Force publication that describes skills and knowledge that an airman in a particular AFSC needs on the job. It further serves as a contract between AETC and the user to show the overall training requirements for an AFSC that the formal schools teach.

**Standard.** An exact value, a physical entity, or an abstract concept established and defined by authority, custom, or common consent to serve as a reference, model, or rule in measuring quantities or qualities, establishing practices or procedures, or evaluating results. It is a fixed quantity or quality.

**Task Module (TM).** A group of tasks performed together within an AFSC that requires common knowledge, skills, and abilities. TMs are identified by an identification code and a statement.

**Total Force.** All collective components (active, reserve, guard, and civilian elements) of the United States Air Force.

**Training Capability.** The capability of a training setting to provide training on specified requirements, based on the availability of resources.

**Training Planning Team (TPT).** Comprised of the same personnel as a U&TW, TPTs are more intimately involved in training development and the range of issues examined is greater than in the U&TW forum.

**Training Requirements Analysis (TRA).** A detailed analysis of tasks for a particular AFSC to be included in the training decision process.

**Training Setting.** The type of forum in which training is provided (formal resident school, on-the-job, field training, mobile training team, self-study, etc.).

**Upgrade Training.** Training that leads to the award of a higher skill level.

**Utilization and Training Pattern.** A depiction of the training provided to and the jobs performed by personnel throughout their tenure within a career field or AFS. There are two types of patterns: 1) Current pattern, which is based on the training provided to incumbents and the jobs to which they have been and are assigned; and 2) Alternate pattern, which considers proposed changes in manpower, personnel, and training policies.

**Utilization and Training Workshop (U&TW).** A forum of the AFCFM, MAJCOM functional managers, subject matter experts (SME), and AETC training personnel that determines career ladder training requirements.

## **Section A - General Information**

**1. Purpose of the CFETP.** This CFETP provides the information necessary for career field managers, training management, supervisors, and trainers to plan, develop, manage, and conduct an effective and efficient career field training program. The plan outlines the training that individuals should receive in order to develop and progress throughout their careers. For purposes of this plan, training is divided into three areas: initial skills, upgrade, and continuation training. Initial skills training is the AFS specific training an individual receives upon entry in the Air Force, normally conducted by AETC at one of the technical training centers. Upgrade training identifies the mandatory courses, task qualification requirements, and Career Development Course (CDC) completion required for award of the 5-, 7-, or 9-skill level. Continuation training is additional training provided to 3-, 5-, 7-, and 9-level personnel to increase their skills and knowledge beyond the minimum required for upgrade. The CFETP has several purposes, some of which are:

- 1.1. Serves as a management tool to plan, develop, manage, and conduct a career field training program. Also, ensures that established training is provided at the appropriate point in an individual's career.
- 1.2. Identifies task and knowledge training requirements for each skill level in the specialty and recommends training throughout each phase of an individual's career.
- 1.3. Lists training courses available in the specialty, identifies sources of the training, and provides the training medium.
- 1.4. Identifies major resource constraints that impact implementation of the desired career field training program.

**2. Use of the CFETP.** The CFETP is maintained by the Air Force Career Field Manager (AFCFM). MAJCOM Functional Managers and AETC review the plan annually to ensure currency and accuracy and forward recommended changes to the AFCFM. Using the list of courses in Part II, they determine whether duplicate training exists and take steps to eliminate/prevent duplicate efforts. Career field training managers at all levels use the plan to ensure a comprehensive and cohesive training program is available for each individual in the career ladder.

- 2.1. AETC training personnel develop/revise formal resident and exportable training based upon requirements established by the users and documented in the STS. They also develop procurement and acquisition strategies for obtaining resources needed to provide the identified training.
- 2.2. MAJCOM Functional Managers ensure their training programs complement the CFETP mandatory initial skill and upgrade requirements. They also identify the needed AFJQSSs/AFQTPs to document unique upgrade and continuation training requirements. Requirements are satisfied through OJT, resident training, or exportable courseware/courses. MAJCOM developed training to support this AFSC must be identified for inclusion into this plan. Forward recommendations concerning this CFETP to your MAJCOM Functional Manager.
- 2.3. 81 TRSS Qualification Training Flight (Q-Flight) personnel develop AFJQSSs/AFQTPs based on requests submitted by the MAJCOMs and according to the priorities assigned by the Communications-Electronics (C-E) Maintenance Training Advisory Group (MATAG) Working Group.
- 2.4. Unit level training managers and supervisors manage and control progression through the career field by ensuring individuals complete the mandatory training requirements for upgrade specified in this plan and supplemented by their MAJCOM. The list of courses in Part II is used as a reference for planning continuation or career enhancement training.

**3. Coordination and Approval of the CFETP.** The AFCFM is the approval authority. MAJCOM representatives and AETC training personnel coordinate on the career field training requirements. The AFCA Mission Area Manager (MAM) reviews CFETPs for accuracy prior to submission for approval by the AFCFM.

## **Section B - Career Field Progression and Information**

**4. Specialty Description.** This information supplements that presented in AFMAN 36-2108.

### **4.1. Computer, Network, Switching and Cryptographic Systems Apprentice/Journeyman.**

4.1.1. Specialty Summary. Installs, sustains, operates, and repairs network infrastructure, cryptographic equipment, missile control communications systems equipment and deployable switching systems in a fixed and deployed environment, including associated transmission, processing, and display equipment.

4.1.2. Duties and Responsibilities:

4.1.2.1. Installs equipment and systems. Checks equipment visually and by using tools and test equipment for serviceability prior to installation. Assembles, connects, and inter-wires components, equipment, and systems. Conducts detailed tests of installed equipment, proper component assembly, and compliance with technical orders. Places in operation, adjusts and, aligns components to obtain maximum efficiency.

4.1.2.2. Performs preventive maintenance routines. Inspects and tests equipment and systems at prescribed intervals to ensure that equipment and systems perform according to published parameters. Identifies and corrects minor deficiencies such as out of tolerance meter readings or indications, loose or improperly seated circuit cards, poor connections, etc. Adjusts or replaces defective parts. Evaluates equipment performance using prescribed operational testing procedures. Performs corrosion control.

4.1.2.3. Maintains, repairs, operates and modifies equipment systems. Isolates malfunctions by using operational troubleshooting and testing techniques, logic diagrams and equations, test programs, resistance measurements, waveform observation, and other tests requiring specialized electronic test equipment. Repairs associated equipment such as data transmitting, processing, display, direct line systems, maintenance networks, voice frequency repeaters, impedance balancing networks, and batteries using appropriate tools and test equipment. Calibrates and aligns system components according to technical orders, manufacturers' handbooks, and local procedures.

4.1.2.4. Maintains inspection and maintenance records and completes maintenance forms. Posts entries on maintenance and inspections records. Completes maintenance data collection forms. Recommends methods to improve equipment performance and maintenance procedures.

4.1.2.5. Prepares deployable facilities and equipment for transportation and employment. Maintains deployable facilities and support equipment using test and shop equipment.

### **4.2. Computer, Network, Switching and Cryptographic Systems Craftsman.**

4.2.1. Specialty Summary. Includes all information in paragraph 4.1.1. Directs maintenance activities. Inspects, installs, troubleshoots, repairs, overhauls and modifies missile control communications equipment, high-speed general purpose and special electronic computer and switching systems., telephone subsets, T-carrier, fiber-optic modems, multiplexers, and line drivers and associated hardware.

4.2.2. Duties and Responsibilities.

4.2.2.1. Includes all duties and responsibilities of paragraph 4.1.2.

4.2.2.2. Advises on problems encountered in installing, operating, repairing, and overhauling equipment and systems. Uses layout drawings, logic diagrams, schematics, and data flowcharts to solve maintenance problems. Analyzes construction and operating characteristics to determine the cause of the malfunction. Executes operational testing programs. Advises and assists programmers and operators on techniques to achieve maximum system efficiency. Devises alignment and calibration procedures. Conducts pre-operational service tests. Diagnoses recurring malfunctions and implements corrective action. Develops repair procedures.

4.2.2.3. Installs, repairs, overhauls, and modifies computer, network, switching and cryptographic systems equipment. Adjusts, aligns, and calibrates equipment to achieve maximum operating efficiency consistent with design characteristics. Fabricates and installs interconnecting cables. Isolates malfunctions using operational test programs and procedures, oscilloscopes, voltmeters, and specially designed testing devices. Analyzes waveforms and resistance measurements for malfunctions. Repairs unserviceable equipment and systems. Tests repaired components, using bench mockups and related test equipment. Employs metered testing instruments, including oscilloscopes, in analyzing machine operation and diagnosing spontaneous complications or malfunctions. Repairs and replaces components such as capacitors, resistors, transistors, and integrated circuits using appropriate hand tools and test equipment. Accomplishes prescribed modifications.

4.2.2.4. Determines requirement for maintenance equipment, tools, and spare parts. Establishes priorities and schedules repair actions. Inspects equipment to determine status. Performs operational tests using test programs to ensure system is functioning properly. Interprets inspection findings and determines adequacy or corrective action. Bench checks new and repaired components for technical order compliance.

4.2.2.5. Directs maintenance activities. Reviews maintenance management publications. Interprets installation and maintenance policies and procedures. Identifies maintenance problem areas. Analyzes maintenance data and recommends corrective actions. Develops procedures to efficiently use resources. Evaluates the justification and practicability of proposed modifications.

4.2.2.6. Performs preventive maintenance routines. Inspects equipment, and verifies installed and repaired components meet performance criteria. Performs corrosion control.

4.2.2.7. Maintains records and forms. Maintains and posts data in maintenance records on component life span, location, and condition. Analyzes and enters data on equipment performance logs.

### **4.3. Computer, Network, Switching and Cryptographic Systems Superintendent.**

4.3.1. Specialty Summary. Manages and directs installing, maintaining, repairing, overhauling, and modifying computer, network, switching and cryptographic systems.

4.3.2. Duties and Responsibilities.

4.3.2.1. Plans and organizes maintenance activities. Prepares reports on maintaining, installing, repairing, and removing all types of computer, network, switching and cryptographic systems to include missile control communications equipment. Plans most economical operation by improving work methods and procedures. Designs and develops organizational structures including manning, duty assignments, and workloads.

4.3.2.2. Directs Computer, Network, Switching and Cryptographic Systems maintenance activities. Checks equipment for serviceability and completeness before installing and in testing operations. Inspects completed installation. Directs personnel in Computer, Network, Switching and Cryptographic Systems (including missile control communications equipment) to sustain, operate, and repair. Advises and assists programmers and operators on techniques for maximum equipment efficiency. Determines extent and economy of repair for malfunctioning equipment. Directs spot inspection checks to maintain desirable work standards. Controls workflow and production by analysis, observation, and assistance to assigned personnel. Implements Air Force supply and personnel management administrative procedures.

4.3.2.3. Inspects and evaluates maintenance activities. Interprets survey findings, and prescribes corrective action. Serves on or directs inspection teams organized to evaluate base or command maintenance programs.

4.3.2.4. Performs systems maintenance functions. Reviews involved, unusual, and difficult problems in repairing, maintaining, modifying, overhauling, removing, and installing Computer, Network, Switching and Cryptographic Systems (including missile control communications equipment.) Recommends methods, techniques, and procedures to overcome maintenance difficulties and to improve spare parts provisioning. Performs equipment and system research and development projects.

**4.4. Communications-Electronics Chief Enlisted Manager.** This specialty “caps” at the Chief Master Sergeant Level with those specialties that came up through the 2E0XX, 2E1XX, 2E2XX, 2E3XX, and 2E6XX career ladders. Personnel attaining the rank of Chief are assigned broad ranging duties in directing and managing diverse functions such as activities that install, remove, relocate, repair, and maintain radar systems (air traffic control and aircraft control and warning), telephone systems, satellite, wideband and telemetry systems, ground radio systems, meteorological and navigation systems, visual, imagery and intrusion detection systems, computer, network, switching and cryptographic, and antenna and cable systems. Other challenges that these Chiefs face are assignments to the White House Communications Agency, Air Force Element at CENTCOM, the Air Force Communications Agency, Defense Information Systems Agency, NATO, etc.

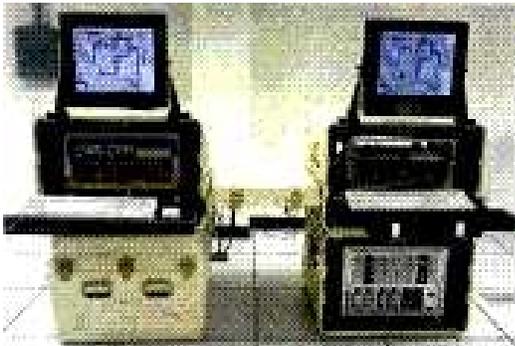
4.5. The following are some of the more common missions you may encounter as a 2E2X1.

### **Air Force Mission Systems**

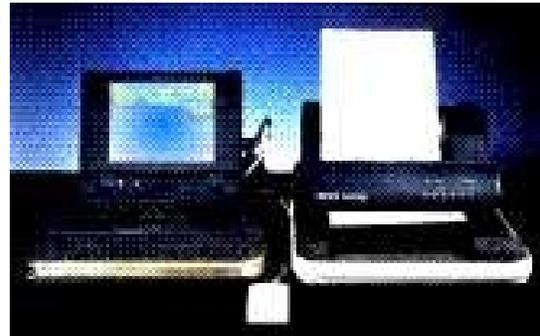


**AFMSS Mission Planning System (MPS)** mission planning tools use an X Window graphical user interface which are installed on commercially available workstations. The MPS tools expand Portable Flight Planning Systems (PFPS) capability to include: Interoperability with Theater Battle Management (TBM) Systems allow for Air Tasking Orders, intelligence and imagery updates, Threat Analysis, Autorouting, Combat Mission Folder production, Terrain Based Radar Predictions, Imagery, and Terrain Based Perspective Views.

**Mission Planning System (MPS) II**



**Portable Flight Planning System (PFPS)**



**Portable Mission Planning System (PMPS)**



## Command and Control Systems

### AN/TYQ-23 Modular Control Equipment



### SACCS Systems



### AWACS Support



## Tactical Telephone Switches

[AN/TTC-39](#)



[SB-3865](#)



[SB-3614](#)



## Theater Deployable Communications (TDC)

### Integrated Communications Access Packages (ICAP)

*Global Grid PAD*

**Contractor:** Motorola, Scottsdale  
AZ

**Description:** Family of communications modules and accessories providing voice and data switching, multiplexing, on-base transmission, and COMSEC for deployed Air Force operations

#### Features

- Packaged in transit cases for deployed operations
- Provides DSN, NIRPNET, and SIPRNET connectivity
- Interoperable with STEP sites



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**5. Skill/Career Progression.** Adequate training and timely progression from the apprentice to superintendent skill levels play an important role in the Air Force's ability to accomplish its mission. It is essential that everyone involved in training do their part to plan, manage, and conduct an effective training program. The guidance provided in this part of the CFETP and the [2E2X1 Education and Training Path](#) table will ensure individuals receive viable training at appropriate points in their careers.

<b>Apprentice (3-Level) Training</b>
Upon completion of initial skills training a trainee will work with a trainer to enhance their knowledge and skills.
Utilize CDCs, AFJQs/AFQTPs, and other exportable courses to progress in the field.
Once task certified, a trainee may perform the task unsupervised.
<b>Journeyman (5-Level) Training</b>
Enter into continuation training to broaden experience base.
Five-levels may be assigned job positions such as team leader and shift supervisor.
Attend the Airman Leadership School (ALS) after serving 48 months in the Air Force or selection to rank of SSgt (active duty only). In-residence or correspondence course is required for Air National Guard/Air Force Reserve Command (ANG/AFRC) personnel.
Use CDCs and other references identified by the AFCFM to prepare for Weighted Airman Performance Systems (WAPS) testing.
Should continue pursuing a Community College of the Air Force (CCAF) degree.
<b>Craftsman (7-Level) Training</b>
A seven-level can expect to fill various supervisory and management positions such as shift leader, team chief, supervisor, or task certifier.
Seven-levels should take courses or obtain added knowledge on management of resources and personnel and attend the 7-level resident course.
Encouraged continuing academic education through CCAF and higher degree programs.
Attend the Noncommissioned Officer Academy (NCOA). In-residence or correspondence course is required for ANG/AFRC personnel.
<b>Superintendent (9-Level) Training</b>
A nine-level can be expected to fill positions such as flight chief, superintendents, and various staff positions.
Should pursue increased knowledge for budget, manpower, resources, and personnel management.
Recommend they pursue additional education and completion of courses outside of their AFS.
Attend Senior Noncommissioned Officer Academy (SNCOA)
<b>Chief Enlisted Manager (CEM) Training</b>
Must be selected for CMSgt and possess qualifications in a feeder specialty (2E190, 2E291, and 2E690).
CEMs work in a variety of similar jobs and functional areas where general managerial and supervisory abilities can be most effectively used and challenged.
Resident graduation of the USAF Senior NCO Academy (SNCOA) is a prerequisite for CMSgt sew-on (active duty only). In-residence or correspondence course required for ANG/AFRC personnel.

**6. Training Decisions.** This CFETP was developed to encapsulate an entire spectrum of training requirements for the Computer, Network, Switching and Cryptographic Systems career field, using a building block approach (simple to complex). Included in this spectrum was the strategy of when, where, and how to meet the training requirements. The strategy must be apparent and affordable to reduce duplication of training and eliminate a disjointed approach to training. The following decisions were made by members of the March 1998 Utilization and Training Workshop.

6.1. The decision was made to restructure and merge Air Force Specialty Codes (AFSC) 2E2X1, 2E2X1A, 2E2X1B, 2E2X1C, 2E2X1D, Electronic Computer and Switching Systems Maintenance with 2E3X1 Secure Communications Systems.

6.2. Initial Skills. The initial skills courses were completely reviewed for content. Basic skills provided in computer and network theory will enable the graduates to work on any legacy or state-of-the-art system. Two basic cryptographic equipment types were chosen to give every graduate a basic understanding and basic qualification in cryptographic equipment. Students will receive a DD Form 1435 upon graduation documenting their cryptographic equipment certifications.

6.2.1. Training on outdated computer equipment such as the SACCS was eliminated from the course. Training on logistics processes, standard installation practices, Core Automated Maintenance System (CAMS) use for entering maintenance data, knowledge on theory of lightwave communications, various cable standards, computer networks, and an introduction to protocols is being added to the course. "A" shred skill awarding course was deleted and replaced with a 5-level supplemental course. Both "B" and "C" shred skill awarding courses will meet training requirements using OJT.

6.2.2. Specific task and knowledge items were transformed into behavioral statements. The results are documented in the Specialty Training Standard (STS).

6.3. Five-Level Upgrade Requirements. Upgrade requirements were updated to include eight standardized areas common to all career fields. The following list identifies the major areas covered: test equipment, standardized maintenance practices, computer security, standard installation practices, communication principles, expeditionary communications principles, information transport concepts, and electrical power systems. Additionally, a review of CDCs resulted in future development being restricted to six volumes. Development of this single set of CDCs will include three volumes which will be used by all 2EXXX career fields. The following table outlines 5-level CDC contents.

VOLUME 1	Electronic Principles (Computer Based Training)
VOLUME 2	Test Equipment
VOLUME 3	Communication Principles
VOLUME 4	AFSC Specific Information
VOLUME 5	AFSC Specific Information
VOLUME 6	AFSC Specific Information

6.3. Seven-Level Upgrade Requirements. Seven level training requirements were added to provide a common core of proficiency among all individuals in 2EXXX arena. Training covers deployment concepts, system planning and implementation, and management principles.

6.4. Proficiency Training. This training is job qualification for an assigned duty position. Additional qualification training becomes necessary when personnel transfer to another duty position, the unit mission changes, a new personnel program comes on board, or any time changes in techniques or procedures occur.

6.5. Continuation Training: The purpose of the continuation training program is to provide additional advanced training, exceeding the minimum upgrade training requirements, with the emphasis on present and future duty positions. MAJCOMs may develop a continuation training program to ensure individuals

in the career field receive the necessary training at the appropriate points in their careers. The training program will identify both mandatory and optional training requirements.

**7. Community College of the Air Force (CCAF) Academic Programs.** Enrollment in CCAF occurs upon completion of basic military training. CCAF provides the opportunity for all enlisted members to obtain an Associate in Applied Science degree. The degree must be completed before the student separates from the Air Force, retires, or is commissioned as an officer. In addition to its associates degree program, CCAF offers the following:

7.1. Occupational Instructor Certification. The College offers the Occupational Instructor Certification to instructors teaching full time in a CCAF affiliated school. To qualify, instructors must complete an instructor course, a teaching practicum, have two years teaching experience, hold an associate or higher degree, and be recommended by their commander/commandant.

7.2. Trade Skill Certification. When a CCAF student separates or retires, a trade skill certification is awarded for the primary occupational specialty. The College uses a competency based assessment process for trade skill certification at one of four proficiency levels-Apprentice, Journeyman, Craftsman/Supervisor, or Master Craftsman/Manager. All are transcribed on the CCAF transcript.

7.3. The Electronic Systems Technology (4VHP) program applies to 2EXXX career fields.

7.3.1. Degree Requirements: Individuals must hold the 5-skill level at the time of program completion.

	Semester hours
Technical Education .....	24
Leadership, Management, and Military Studies .....	6
Physical Education .....	4
General Education .....	15
Program Electives .....	15
<b>Total</b>	<b>64</b>

7.3.2. Technical Education (24 semester hours): A minimum of 12 semester hours of Technical Core subjects and courses must be applied and the remaining semester hours will be applied from Technical Core/Technical Elective subjects and courses.

7.3.3. Leadership, Management, and Military Studies (6 semester hours): Professional military education and/or civilian management courses. See CCAF General Catalog for application of civilian management courses.

7.3.4. Physical Education (4 semester hours): Satisfied upon completion of basic military training.

7.3.5. General Education (15 semester hours): Courses must meet the criteria for application of courses to the General Education requirement and be in agreement with the definitions of applicable General Education subjects/courses as outlined in the CCAF General Catalog.

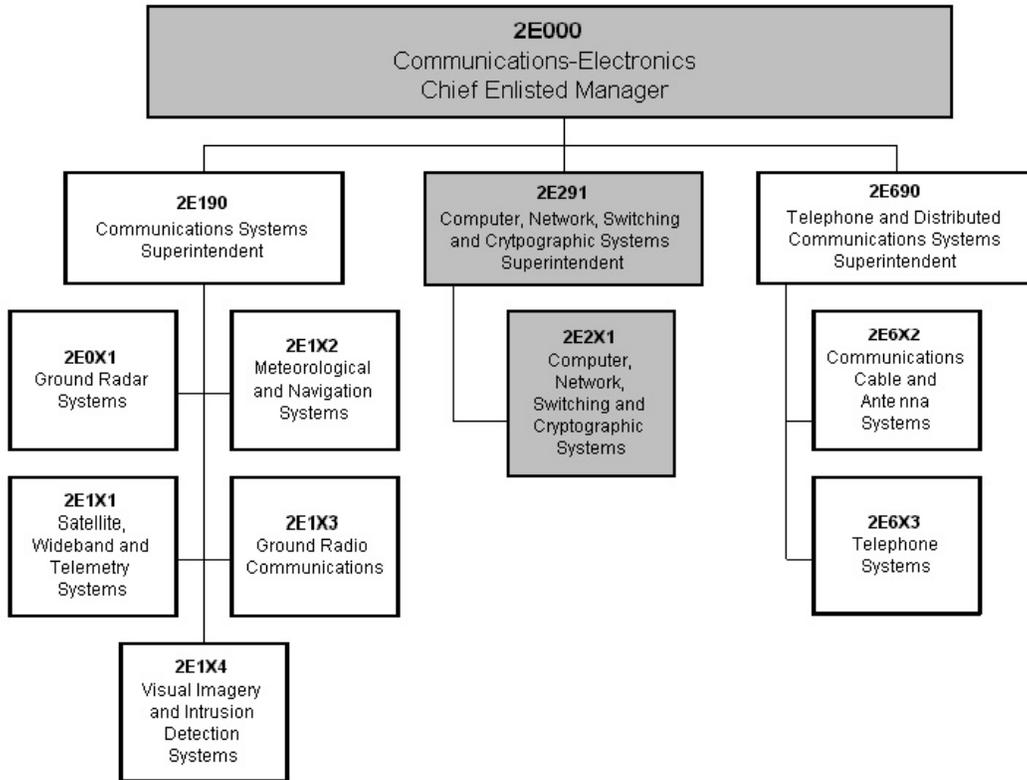
7.3.6. Program Elective (15 semester hours): Satisfied with applicable Technical Education; Leadership, Management, and Military Studies; or General Education courses, including natural science courses meeting General Education requirement application criteria. Six semester hours of CCAF degree applicable technical credit otherwise not applicable to this program may be applied.

7.4. See the current CCAF General Catalog for details regarding the Associates of Applied Science in Electronic Systems Technology. The catalog is available at your education officer or from <http://www.au.af.mil/au/ccaf>.

7.5. Additional off-duty education is a personal choice that is encouraged for all. Individuals desiring to become an AETC instructor should be actively pursuing an associate degree. A degreed faculty is necessary to maintain CCAF's accreditation through the Southern Association of Colleges and Schools.

**8. Career Field Path.** The following summarizes career progression and personnel allocations across the career ladder. 2E1XX and 2E0X1 personnel maintain their individual AFSC identifiers through the rank of MSgt. Upon promotion to SMSgt, AFSC 2E1X1, 2E1X2, 2E1X3, 2E1X4, and 2E0X1 merge to become a 2E190. At Chief, the 2E190 merges with other 2EXXX 9-level specialties to become a 2E000. Specific demographic information is available on the Web at <http://www.afpc.randolph.af.mil/demographics/demograf/CAFSC.html>.

### 2EXXX Career Field Progression



**2E2X1 COMPUTER, NETWORK, SWITCHING AND CRYPTOGRAPHIC SYSTEMS  
EDUCATION AND TRAINING PATH**

EDUCATION AND TRAINING REQUIREMENTS	AVERAGE SEW ON TIME AND COMMENTS
BASIC MILITARY TRAINING SCHOOL	
APPRENTICE TECHNICAL SCHOOL (3-SKILL LEVEL)	Airman ..... 6 months
UPGRADE TO JOURNEYMAN (5-SKILL LEVEL) Minimum 15 months OJT training (9 months for retrainees). Completion of all 2E251 CTG core tasks and 5-Level CDCs..... Mandatory  Specific AFJQs/AFQTPs for equipment at assigned location. ..... Mandatory  Maintenance Management and Generic AFJQs/AFQTPs for various unit level duties..... Mandatory  AETC Supplemental training courses as determined by MAJCOM ..... Optional  AFETS/CFS/SMT training as determined by MAJCOM..... Optional	A1C..... 16 months  SrA..... 3 years Earliest..... 3 years HYT ..... 10 years
AIRMAN LEADERSHIP SCHOOL (ALS) Attendance is limited to SSgt selectees or those attaining 48 months Total Active Federal Military Service (TAFMS) and who have not been selected for promotion to SSgt. Completion is mandatory before assuming the rank of SSgt. ANG/AFRC may complete by correspondence course..... Mandatory	TRAINER: Any rank may qualify as a trainer provided they attend a formal OJT Trainer course; are officially appointed by the commander; and are certified on the task they are training.
UPGRADE TO CRAFTSMAN (7-SKILL LEVEL) Minimum rank of SSgt. 12 months OJT training. Completion of all 2E271 CTG core tasks and AFQTP 2EXXX-201L, Communications-Electronics Work Center Manager's Handbook. Attendance at formal 7-level school. Must be 7-level to sew on TSgt..... Mandatory  Maintenance Management and Generic AFJQs/AFQTPs for various unit level duties..... Mandatory  AETC Supplemental training courses as determined by MAJCOM ..... Optional  AFCA Systems Seminar at Scott AFB. Consult your MAJCOM for course quotas ..... Optional  AFETS/CFS/SMT training as determined by MAJCOM..... Optional	SSgt..... 7.5 years Earliest..... 3 years HYT ..... 20 years  TSgt ..... 12.5 years Earliest..... 5 years HYT ..... 22 years  CERTIFIER: Must be a SSgt and possess at least a 5-skill level or equivalent experience (civilians); be officially appointed by the commander; attend a formal OJT Certifier course; be certified on the task they are certifying; and be a person other than the trainer.

**2E2X1 COMPUTER, NETWORK, SWITCHING AND CRYPTOGRAPHIC SYSTEMS  
EDUCATION AND TRAINING PATH**

EDUCATION AND TRAINING REQUIREMENTS	AVERAGE SEW ON TIME AND COMMENTS
<p>NONCOMMISSIONED OFFICER ACADEMY (NCOA). Attendance is limited to TSgt and TSgt selectees. Completion is mandatory before assuming the rank of MSgt. ANG/AFRC may attend in-residence as SSgt or TSgt or complete correspondence course.</p> <p>NCOA Correspondence Course ..... Optional</p>	<p>MSgt ..... 16 years Earliest ..... 8 years HYT ..... 24 years</p>
<p>USAF SENIOR NONCOMMISSIONED OFFICER ACADEMY (SNCOA) Attendance is limited to SMSgt, SMSgt selectees, and selected MSgts. Completion is mandatory before assuming the rank of CMSgt. ..... Mandatory</p> <p>SNCOA Correspondence Course ..... Optional</p> <p>ANG/AFRC may complete by correspondence course. ANG/AFRC MSgts may attend in-residence. .... Mandatory</p>	<p>SMSgt ..... 19.2 years Earliest ..... 11 years HYT ..... 26 years</p>
<p>UPGRADE TO SUPERINTENDENT (9-SKILL LEVEL)</p> <p>Minimum rank of SMSgt.</p> <p>Complete SNCOA ..... Mandatory</p> <p>Complete AFQTP 2EXXX-201LB, Communications-Electronics Manager's Handbook. .... Mandatory</p> <p>Maintenance Management and Generic AFJQSs/AFQTPs for various unit level duties ..... Mandatory</p>	<p>CMSgt ..... 21.5 years Earliest ..... 14 years HYT ..... 30 years</p>

NOTE 1: Published sew on times are Air Force averages. Refer to the Air Force Personnel Center's homepage to determine career field specific information: <http://www.afpc.randolph.af.mil/eprom>.

NOTE 2: See Part II, Section D for a list of AFJQSs/AFQTPs, AETC supplemental, and AFETS/CFS/SMT training.

## Section C - Skill Level Training Requirements

**9. Purpose.** The various skill levels in the career field are defined in terms of tasks and knowledge requirements for each skill level in the Computer, Network, Switching and Cryptographic Systems career field of the Communications-Electronics Systems career ladder. They are stated in broad, general terms and establish the standards of performance. An all encompassing core task list has not been developed for this specialty because of the diversity of the missions supported and the equipment installed to meet mission requirements. Core tasks, knowledge items, and skill requirements for this specialty are identified in the STS, CDCs, AFJQSs/AFQTPs, etc. Completion of the mandatory 3-level skill awarding course, CDCs, 7-level course, and applicable AFJQSs/AFQTPs define the Air Force core tasks for this specialty.

### 10. Specialty Qualification Requirements.

#### 10.1. Apprentice (3-Level) Training.

KNOWLEDGE	<p>Fundamentals of electronics; digital theory; fundamentals of computer and network; protocols; cryptographic techniques and equipment configuration; and communication and switching systems principles of operation and technologies</p> <p>Basic troubleshooting procedures, operation and use of test equipment; computer programming techniques; use of technical data, wiring diagrams, and schematic drawings</p> <p>Structure and use of Air Force supply system</p>
EDUCATION	Completion of high school with courses in computers and mathematics is desirable.
TRAINING	<p>Electronics Principles, course E3AQR2E231 481 (PDS Code PO1 (See Attachment 1 of the STS for course training standard)</p> <p>Computer, Network, Switching and Cryptographic Systems, course E3ABR2E23 002 (PDS Code NCO) (See Attachment 2 of the STS for course training standard)</p> <p>Mandatory completion of training according to AFI 21-109, <i>Communications Security, Equipment Maintenance and Maintenance Training</i> for those sustaining cryptographic equipment</p>
EXPERIENCE	None required.
OTHER	<p>Normal color vision is required for entry into this AFSC as defined by AFI 48-123, <i>Medical Examination and Standards</i>.</p> <p>Qualification to operate government vehicles according to AFI 24-301, <i>Vehicle Operations</i>.</p> <p>Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i>, is mandatory for award and retention of this AFSC.</p>
IMPLEMENTATION	Entry into training is accomplished by reserving a position in the career field upon entry into the Air Force.

10.2. Journeyman (5-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	<p>Course J4AST2E251 037 (Data Processor Display Systems Maintenance) at Tinker AFB, OK. (Mandatory upgrade requirement for personnel assigned to AWACS systems.)</p> <p>Course J4AMF/ASF/AST2E251 048 (Line Printer RP-218/A Intermediate Maintenance) at Tinker AFB, OK. (Mandatory for personnel assigned to AWACS intermediate maintenance level positions.)</p> <p>Mandatory completion of training according to AFI 21-109, <i>Communications Security, Equipment Maintenance and Maintenance Training</i> for those sustaining cryptographic equipment</p>
EXPERIENCE	<p>Qualification and possession of AFSC 2E231</p> <p>Experience in functions such as installing, troubleshooting, repairing, operating, testing, or modifying computer, network, missile control, cryptographic and tactical switching systems</p> <p>Completion of the 2E251 Career Development Course</p> <p>Completion of all 2E251 CTG core tasks (See Attachment 3 of the STS for career training guide)</p> <p>Completion of applicable equipment AFJQSS/AFQTPs</p> <p>Completion of all local tasks assigned for the duty position</p>
OTHER	Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i> , is mandatory for award and retention of this AFSC.
IMPLEMENTATION	Entry into formal upgrade is initiated upon assignment to the individual's first duty station. Qualification training is initiated anytime individuals are assigned duties for which they are not qualified. Use CDCs and AFJQSS/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.

### 10.3. Craftsman (7-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	<p>Communications-Electronics Career Advancement Course (In-residence), E3ACR2EX7X 002 (PDS 7SI) [Active Duty only]</p> <p>Communications-Electronics Career Advancement Course (Distance learning), E6ADL2EX7X 000 (PDS Code 4VI) [Guard/Reserve only]</p> <p>Communications-Electronics Career Advancement Course (Self-paced), E6AZS2EX7X 006 (PDS X2J) [Prerequisite for Guard/Reserve members prior to attending the above distance learning course]</p> <p>Mandatory completion of training according to AFI 21-109, <i>Communications Security, Equipment Maintenance and Maintenance Training</i> for those sustaining cryptographic equipment</p>
EXPERIENCE	<p>Qualification and possession of AFSC 2E251</p> <p>Experience in performing or supervising functions such as installing, troubleshooting, repairing, operating, testing, or modifying assigned systems</p> <p>Completion of all 2E271 CTG core tasks (See Attachment 4 of the STS for career training guide)</p> <p>Completion of AFQTP 2EXXXX-201L, Communications-Electronics Work Center Manager's Handbook</p> <p>Completion of applicable equipment/unit management function AFJQSS/AFQTPs</p>
OTHER	Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i> , is mandatory for award and retention of this AFSC.
IMPLEMENTATION	Entry into formal upgrade training is initiated when individuals obtain the necessary rank and skill level. Qualification training is initiated anytime an individual is assigned duties for which they are not qualified. Use CDCs and AFJQSS/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.

#### 10.4. Superintendent (9-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	No AETC training requirement.
EXPERIENCE	Qualification and possession of AFSC 2E271 Experience in managing functions such as installing, troubleshooting, repairing, overhauling or modifying assigned systems AFQTP 2EXXXX-201LB, Communications-Electronics Manager's Handbook
OTHER	Eligibility for a Secret security clearance according to AFI 31-501, <i>Personnel Security Program Management</i> , is mandatory for award and retention of this AFSC.
IMPLEMENTATION	Entry into OJT is initiated when individuals are selected for the rank of SMSgt. Qualification training is initiated anytime individuals are assigned duties for which they are not qualified.

#### 10.5. Training Sources.

10.5.1. Electronic Principles training - 332 TRS, Keesler AFB, MS at <https://wwwmil.keesler.af.mil/>.

10.5.2. AFSC specific training - 338 TRS, Keesler AFB, MS. at <https://wwwmil.keesler.af.mil/>.

10.5.3. 2EX7X Communications-Electronics Career Advancement course (7-Level School) – 338 TRS, Keesler AFB, MS at <https://wwwmil.keesler.af.mil/>.

10.5.4. CDC 2E251 is available for upgrade purposes through the unit training manager. For individual qualification and cross-utilization training, CDCs are ordered through the unit training office.

10.5.5. AFJQsS/AFQTPs are Air Force publications and are mandatory for use in qualification training. They are developed by the 81 TRSS (Q-Flight), Keesler AFB, MS and may be downloaded from <https://wwwmil.keesler.af.mil/81trss/qflight/welcome.html>. Procedures for requesting development of AFJQsS/AFQTPs are contained in AFI 36-2233 *Air Force On-the-Job Training Products for Communications-Electronics Enlisted Specialty Training*. AFJQsS/AFQTPs are listed in Part II, Section D, of this CFETP.

10.5.6. Air Force Engineering and Technical Service (AFETS) (course listing found at [https://www.afca.scott.af.mil/c-e\\_maint/afets.htm](https://www.afca.scott.af.mil/c-e_maint/afets.htm)), Contract Field Service (CFS), and Special Maintenance Team (SMT) training may be requested to provide on-site training. The AFETS program is outlined in AFI 21-110, *Engineering and Technical Services Management and Control*. Direct requests for AFETS, CFS, or SMT training to your MAJCOM.

## **Section D - Resource Constraints**

**11. Purpose.** This section identifies known resource constraints that preclude optimal/desired training from being developed or conducted, including information such as part numbers, national stock numbers, number of units required, cost, manpower, etc. Included are narrative explanations of each resource constraint and an impact statement describing what effect each constraint has on training. Finally, this section includes actions required, OPR, and target completion date. Resource constraints will be, at a minimum, reviewed and updated annually.

### **12. Apprentice (3-Level) Training.**

12.1. Constraints: None.

12.1.1. Impact. N/A

12.1.2. Resources Required. N/A

12.1.3. Action Required. N/A

12.2. OPR/Target Completion Date. N/A

### **13. Journeyman (5-Level) Training.**

13.1. Constraints: None.

13.1.1. Impact. N/A

13.1.2. Resources Required. N/A

13.1.3. Action Required. N/A

13.2. OPR/Target Completion Date. N/A

### **14. Craftsman (7-Level) Training.**

14.1. Constraints: None.

14.1.1. Impact. N/A

14.1.2. Resources Required. N/A

14.1.3. Action Required. N/A

14.2. OPR/Target Completion Date. N/A

## **Section E - Transition Training Guide**

**15.** There are currently no transition training requirements. This area is reserved.

## **PART II**

### **Section A - Specialty Training Standard**

**1. Implementation.** The implementation of training in support of this STS is with the class beginning 20010206 and graduating 20010522.

**2. Purpose.** As prescribed in AFI 36-2201, this STS:

2.1. The Course Training Standards (CTS) at Attachments 1 and 2:

2.1.1. Establishes the training requirements for airmen to perform 3-skill level duties in the Computer, Network, Switching and Cryptographic Systems career ladder of the Airman Communications-Electronics Systems career field. The training tasks are based on an analysis of duties in AFMAN 36-2108 for AFSC 2E2X1.

2.1.2. Provides the basis for the development of more detailed training materials, training objectives, and training evaluation instruments for the course.

2.1.3. Shows formal training requirements. Attachment 1 lists the Electronic Principles requirements for this specialty and contains the proficiency code key pertaining to this attachment. Students receive this training through AETC course E3AQR2E23X1 481.

2.1.4. Attachment 2 contains a list of behavioral statements that describe knowledge and job performance requirements the graduate demonstrates on the job as a result of training received in course E3ABR2E231 002 as described in the Air Force Education and Training Course Announcements (ETCA) database (formerly AFCAT 36-2223, USAF Formal Schools Catalog). Part I, Section D, and the Preface to Attachment 2 explains constraints and/or guidelines to training. When notes or explanations describe constraints in the skill awarding course, they indicate that training on those items is restricted due to the limitation described.

2.2. The Five-Level Career Training Guide (CTG) at Attachment 3:

2.2.1. Provides a complete list of continuation training requirements for the award of AFSC 2E251. Attachment 3 contains the behavioral code key used to indicate the type of training provided by CDCs.

2.2.2. Identifies the mandatory task and knowledge training that is required for the 5-skill level in the Computer, Network, Switching and Cryptographic Systems career field of the Airman Communications-Electronic Systems career ladder. These are based on an analysis of duties and responsibilities as outlined in AFMAN 36-2108.

2.3. The Seven-Level Career Training Guide (CTG) at Attachment 4:

2.3.1. Provides a complete list of continuation training requirements for the award of AFSC 2E271. Attachment 4 contains the behavioral code key used to indicate the type of training that will be provided.

2.3.2. Identifies the mandatory task and knowledge training that is required for the 7-skill level in the Computer, Network, Switching and Cryptographic Systems ladder of the Airman Communications-Electronics Systems career field. These are based on an analysis of duties and responsibilities as outlined in AFMAN 36-2108.

2.4. The CTGs at Attachments 3 and 4:

2.4.1. Provide OJT certification columns to record completion of task and knowledge training requirements. Use automated training management systems to document technician qualifications, if available. Task certification must show a start and stop date.

2.4.2. Become a job qualification standard for OJT when placed in AF Form 623, On-the-Job Training Record, and used according to AFI 36-2201. OJT tasks in column 1 are trained to the go/no go level. Go means the individual can perform the task without assistance and meet local requirements for accuracy, timeliness, and correct use of procedures.

2.4.2.1. Training Documentation. Document and certify completion of training. Identify duty position requirements by circling the subparagraph number next to the task statement. Complete the following columns in Part II of the CFETP:

2.4.2.1.1. Initial Certification. Evaluate qualifications and when verified, certify using:

2.4.2.1.1.1. Core/Critical Tasks. Start date, stop date, trainee's initials, trainer's initials, and certifier's initials.

2.4.2.1.1.2. Non-Core/Non-Critical Tasks. Start date, stop date, trainee's initials, and trainer's initials.

2.4.2.1.2. Transcribing from Old Document to CFETP. Evaluate current qualifications and when verified recertify using:

2.4.2.1.2.1. Tasks Previously Certified and Required in Current Duty Position (Core/Critical Tasks). Current date as completion date, trainee's initials, and certifier's initials.

2.4.2.1.2.2. Tasks Previously Certified and Required in Current Duty Position (Non-Core/Non-Critical Tasks). Current date as completion date, trainee's initials, and trainer's initials.

2.4.2.1.2.3. Tasks Previously Certified but Not Required in Current Duty Position. Carry forward only the previous completion date of certification (not the initials of another person). If and when transcribed tasks become duty position requirements, recertify using standard certification procedures.

2.4.2.1.2.4. The person whose initials appear in the trainer or certifier block during the transcription process must meet the requirements of their prescribed role.

2.4.2.1.2.5. Give the member the old CFETP upon completion of transcription.

2.4.2.1.3. Documenting Career Knowledge. When a CDC is not available: the supervisor identifies STS training references the trainee requires for career knowledge and ensures, as a minimum, that trainees cover the mandatory items in AFMAN 36-2108, *Developing, Managing, and Conducting Training*. For two time CDC course exam failures, supervisors identify all STS items corresponding to the areas covered by the CDC. The trainee completes study of the STS references, undergoes evaluation by the task certifier, and receives certification on the STS. NOTE: Career knowledge must be documented prior to submitting a CDC waiver.

2.4.2.1.4. Decertification and Recertification. When an airman is found to be unqualified on a task previously certified, the supervisor lines through the previous certification or deletes the previous certification when using an automated system. Appropriate remarks are entered on the AF Form 623A, On-The-Job Training Record Continuation Sheet, as to the reason for decertification. The individual is recertified using the normal certification process.

2.4.3. Indicates career knowledge provided in the 5-skill level CDCs. See Air Force Institute for Advanced Distributed Learning (AFIADL) catalog maintained by the unit OJT manager for current CDC listings or go to <http://www.maxwell.af.mil/au/afiadl>.

2.4.4. Are guides for development of promotion tests used in the Weighted Airman Promotion System (WAPS). Specialty Knowledge Tests (SKT) are developed at the USAF Occupational Measurement Squadron by senior NCOs with extensive practical experience in their career fields. The tests sample knowledge of CTG subject matter areas judged by test development team members to be most appropriate for promotion to higher grades. Questions are based upon study references listed in the WAPS catalog. Individual responsibilities are listed in chapter 1 of AFI 36-2605, *Air Force Military Personnel Testing System*. WAPS is not applicable to the Air National Guard or Air Reserve forces.

**3. Recommendations.** Comments and recommendations are invited concerning the quality of AETC training. A Customer Service Information Line (CSIL) has been installed for the supervisors' convenience. For a quick response to concerns, call our CSIL at DSN 597-4566, fax us at DSN 597-3790, or e-mail us at, [81trg-tget@keesler.af.mil](mailto:81trg-tget@keesler.af.mil). Reference this CTS and identify the specific area of concern (paragraph, training standard element, etc).

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

MICHAEL E. ZETTLER, Lieutenant General, USAF  
Deputy Chief of Staff /Installations & Logistics

Attachments:

1. Electronic Principles Course Training Standard
2. Course Training Standard, 2E231
3. Five-Level Career Training Guide, 2E251
4. Seven-Level Career Training Guide, 2E271

**PREFACE**

NOTE 1: Dashed items in this CTS are not part of the original CTS created at the August 1999 Electronic Principles U&TW however, they are the specific objectives taught in the Electronic Principles course designed to meet the CTS requirements.

NOTE 2: Unless otherwise stated, students may be allowed two assists from the instructor and still successfully achieve the proper level of proficiency. An instructor assist is anytime an instructor must intercede to provide guidance to a student which leads to a satisfactory completion of the objective or to prevent the student from continuing in a manner that will lead to an unsatisfactory conclusion, safety violation, or damage to equipment.

NOTE 3: All objectives are trained during wartime.

<b>PROFICIENCY CODE KEY</b>		
	<b>SCALE VALUE</b>	DEFINITION: The individual
<b>Task Performance Levels</b>	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
<b>*Task Knowledge Levels</b>	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step-by-step procedures for doing the task. (PROCEDURES)
	c	Can identify why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, isolate, and resolve problems about the task. (COMPLETE THEORY)
<b>**Subject Knowledge Levels</b>	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
<b>EXPLANATIONS</b>		
<p>* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b)</p> <p>** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task or for a subject common to several tasks.</p> <p>X This mark is used alone instead of a scale value to show that no proficiency training is provided in the course.</p> <p>- This mark is used alone in course columns to show that training is required, but not given, due to limitations in resources.</p>		

PROFICIENCY  
CODE

**1. ELECTRONIC SUPPORT SUBJECTS.**

- 1.1. Safety. B  
– Identify safety precautions pertaining to electronics.
- 1.2. First Aid. B  
– Identify first aid procedures for electrical injuries.
- 1.3. Electrostatic Discharge (ESD) Control. B  
– Identify electrostatic discharge (ESD) sensitive device control methods.
- 1.4. Electromagnetic Effects (EMP/EMI). B  
– Identify the techniques used to protect electronic equipment from the effects of electromagnetics (EMP/EMI).
- 1.5. Metric Notation.
- 1.5.1. Powers of Ten. B  
– Convert decimal numbers to scientific notation and vice versa.  
– Perform math operations of numbers expressed as scientific notation.
- 1.5.2. Electrical Prefixes. B  
– Convert decimal numbers to electrical prefixes and vice versa.  
– Convert electrical prefix values to other equivalent electrical prefix values.

**2. USE TEST EQUIPMENT.**

- 2.1. Analog Multimeter. 2b  
– Identify the operating principles of the analog multimeter.  
– Identify procedures for analog multimeter usage.  
– Measure selected electrical values using analog and digital multimeters.
- 2.2. Digital Multimeter. 2b  
– Identify the operating principles of the digital multimeter.  
– Identify procedures for digital multimeter usage.  
– Measure selected electrical values using analog and digital multimeters.
- 2.3. Oscilloscope. 2b  
– Identify oscilloscope operating principles.  
– Identify the procedures for oscilloscope usage.  
– Measure selected electrical values using an oscilloscope and signal generator.
- 2.4. Signal Generator. 2b  
– Identify the procedures for signal generator usage.  
– Measure selected electrical values using an oscilloscope and signal generator.

**3. BASIC CIRCUITS.**

- 3.1. Direct Current (DC).
- 3.1.1. Terms. B  
– Identify terms associated with direct current (DC) principles

	PROFICIENCY CODE
3.1.2. Theory. <ul style="list-style-type: none"><li>– Identify circuit schematic symbols.</li><li>– Identify basic circuit operating principles.</li><li>– Determine the results of parameter changes on DC resistive circuits.</li><li>– Identify resistor voltage divider operating principles.</li></ul>	B
3.1.3. Calculations. <ul style="list-style-type: none"><li>– Calculate values for a series resistive DC circuit diagram.</li><li>– Calculate values for a parallel resistive DC circuit diagram.</li><li>– Calculate values for a series-parallel resistive DC circuit diagram.</li></ul>	B
3.2. Alternating Current (AC).	
3.2.1. Terms. <ul style="list-style-type: none"><li>– Identify terms associated with AC principles.</li></ul>	B
3.2.2. Calculations. <ul style="list-style-type: none"><li>– Calculate AC voltage values.</li><li>– Calculate AC frequency/time values.</li></ul>	B
<b>4. BASIC CIRCUIT COMPONENTS.</b>	
4.1. Resistors.	
4.1.1. Theory. <ul style="list-style-type: none"><li>– Identify resistor characteristics.</li></ul>	B
4.1.2. Color Code. <ul style="list-style-type: none"><li>– Using resistor color code, determine the ohm/tolerance value of resistors.</li></ul>	B
4.1.3. Troubleshoot. <ul style="list-style-type: none"><li>– Troubleshoot a series-parallel resistive circuit to a faulty resistor.</li></ul>	2b
4.2. Inductors.	
4.2.1. Theory. <ul style="list-style-type: none"><li>– Identify characteristics of inductors.</li><li>– Identify inductor DC operating principles.</li><li>– Identify inductor AC operating principles.</li></ul>	B
4.2.2. Troubleshoot. <ul style="list-style-type: none"><li>– Troubleshoot a faulty inductor in a circuit.</li></ul>	2b
4.3. Capacitors.	
4.3.1. Theory. <ul style="list-style-type: none"><li>– Identify characteristics of capacitors.</li><li>– Identify capacitor DC operating principles.</li><li>– Identify capacitor AC operating principles.</li></ul>	B
4.3.2. Troubleshoot. <ul style="list-style-type: none"><li>– Troubleshoot a faulty capacitor in circuit.</li></ul>	2b

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4.4. Resistive-Capacitive-Inductive (RCL) Circuit Theory.	
4.4.1. Basic.	B
– Identify RCL circuit operating principles.	
4.4.2. Resonant.	B
– Identify resonant RCL circuit operating principles.	
4.4.3. Frequency Sensitive Filter.	B
– Identify frequency sensitive filter operating principles.	
<b>5. ELECTROMAGNETIC DEVICES.</b>	
5.1. Transformers.	
5.1.1. Theory.	B
– Identify characteristics of transformers.	
– Identify transformer operating principles.	
5.1.2. Troubleshoot.	2b
– Troubleshoot a faulty transformer.	
5.2. Relays and Solenoids.	
5.2.1. Theory.	B
– Identify relay and solenoid operating principles.	
5.2.2. Troubleshoot Relays.	2b
– Troubleshoot a faulty relay in a circuit.	
5.3. Motor Theory.	
5.3.1. Direct Current.	B
– Identify DC motor operating principles.	
5.3.2. Alternating Current.	B
– Identify AC motor operating principles.	
5.4. Generator Theory.	
5.4.1. Direct Current.	B
– Identify DC generator operating principles.	
5.4.2. Alternating Current.	B
– Identify AC generator operating principles.	
5.5. Synchro/Servo.	
5.5.1. Theory.	B
– Identify servo/synchro operating principles.	

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5.5.2. Fault Isolate. – Identify servo/synchro fault isolation procedures.	2b
5.6. Transducer Theory. – Identify transducer operating principles.	B
<b>6. SOLID STATE DEVICES.</b>	
6.1. Diodes.	
6.1.1. Theory. – Identify solid state diode operating principles.	B
6.1.2. Troubleshoot. – Identify diode fault isolation techniques. – Troubleshoot a diode circuit.	2b
6.2. Bipolar Junction Transistors.	
6.2.1. Theory. – Identify bipolar transistor operating principles.	B
6.2.2. Troubleshoot. – Troubleshoot a bipolar junction transistor circuit.	2b
6.3. Special Purpose Device Theory.	
6.3.1. Zener Diode. – Identify zener diode operating principles.	B
6.3.2. Light Emitting Diode (LED). – Identify LED operating principles.	B
6.3.3. Liquid Crystal Display (LCD). – Identify LCD operating principles.	B
6.3.4. Integrated Circuits (IC). – Identify integrated circuit (IC) operating principles.	B
6.3.5. Metal Oxide Semiconductor Field Effect Transistor (MOSFET). – Identify MOSFET operating principles.	B
6.3.6. Operational Amplifier (OP AMP). – Identify OP AMP operating principles.	B
<b>7. TRANSISTOR AMPLIFIER CIRCUITS.</b>	
7.1. Theory. – Identify the transistor amplifier configurations. – Identify common emitter amplifier operating principles. – Identify common collector amplifier operating principles. – Identify common base amplifier operating principles.	B

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7.2. Stabilization. <ul style="list-style-type: none"><li>– Identify transistor amplifier temperature stabilization operating principles.</li></ul>	B
7.3. Coupling. <ul style="list-style-type: none"><li>– Identify coupling circuit operating principles.</li></ul>	B
7.4. Troubleshoot. <ul style="list-style-type: none"><li>– Troubleshoot a transistor amplifier circuit to a faulty component.</li></ul>	2b
<b>8. POWER SUPPLY CIRCUITS.</b>	
8.1. Theory.	
8.1.1. Rectifiers. <ul style="list-style-type: none"><li>– Identify power supply rectifier operating principles.</li></ul>	B
8.1.2. Filters. <ul style="list-style-type: none"><li>– Identify power supply filter operating principles.</li></ul>	B
8.1.3. Voltage Regulators. <ul style="list-style-type: none"><li>– Identify shunt regulator operating principles.</li><li>– Identify series electronic voltage regulator (EVR) operating principles.</li></ul>	B
8.2. Troubleshoot. <ul style="list-style-type: none"><li>– Identify types of malfunctions in a filtered power supply circuit.</li><li>– Troubleshoot a filtered power supply circuit to a faulty component.</li><li>– Troubleshoot a series EVR circuit to a faulty component.</li></ul>	2b
<b>9. WAVE GENERATING CIRCUITS.</b>	
9.1. Theory.	
9.1.1. Oscillators. <ul style="list-style-type: none"><li>– Identify the characteristics of oscillator circuits.</li><li>– Identify LC oscillator operating principles.</li><li>– Identify crystal oscillator operating principles.</li></ul>	B
9.1.2. Multivibrators. <ul style="list-style-type: none"><li>– Identify astable multivibrator operating principles.</li><li>– Identify monostable multivibrator operating principles.</li><li>– Identify bistable multivibrator operating principles.</li></ul>	B
9.1.3. Waveshaping Circuits. <ul style="list-style-type: none"><li>– Identify RC integrating/differentiating circuit operating principles.</li><li>– Identify sawtooth generator operating principles.</li></ul>	B
9.2. Fault Isolate. <ul style="list-style-type: none"><li>– Fault isolate a wave generating circuit.</li></ul>	2b

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**10. DIGITAL NUMBERING SYSTEMS.**

10.1. Conversions.

10.1.1. Binary.

- Identify principles of binary conversions.

B

10.1.2. Octal.

- Identify principles of octal conversions.

B

10.1.3. Hexadecimal.

- Identify principles of hexadecimal conversions.

B

10.1.4. Binary Coded Decimal.

- Identify principles of binary coded decimal (BCD) conversions.

B

10.2. Binary Math Operations.

- Determine the results of math operations.

B

**11. DIGITAL LOGIC CIRCUITS.**

11.1. Theory.

11.1.1. Gates.

- Identify principles of logic gate operation.

B

11.1.2. Flip-Flops.

- Identify principles of flip-flop operation.

B

11.1.3. Counters.

- Identify operating principles of counters.

B

11.1.4. Registers.

- Identify operating principles of registers.

B

11.1.5. Combinational Logic Circuits.

- Identify operating principles of combinational logic circuits.

B

11.2. Troubleshoot.

- Troubleshoot a combinational logic circuit.

B

11.3. Digital-to-Analog (D/A) and Analog-to-Digital (A/D) Converter Theory.

- Identify operating principles of a digital-to-analog (D/A) converters.
- Identify operating principles of analog-to-digital (A/D) converters.

B

**12. BASIC COMPUTER FUNDAMENTALS.**

12.1. Computer Theory.

12.1.1. Hardware.

- Identify computer hardware operating principles.

B

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12.1.2. Software.	
12.1.2.1. Operating Systems. <ul style="list-style-type: none"><li>– Identify computer operating systems principles.</li></ul>	B
12.1.2.2. Virus Protection. <ul style="list-style-type: none"><li>– Identify computer virus protection operating principles.</li></ul>	B
12.1.2.3. Diagnostics. <ul style="list-style-type: none"><li>– Identify computer diagnostics operating principles.</li></ul>	B
12.1.2.4. Applications. <ul style="list-style-type: none"><li>– Identify computer applications operating principles.</li></ul>	B
12.1.3. Peripherals. <ul style="list-style-type: none"><li>– Identify computer peripheral devices operating principles.</li></ul>	B
12.2. Network Theory.	
12.2.1. Components. <ul style="list-style-type: none"><li>– Identify basic network hardware component operating principles.</li></ul>	B
12.2.2. Types. <ul style="list-style-type: none"><li>– Identify basic network communication system types.</li></ul>	B
12.2.3. Topologies. <ul style="list-style-type: none"><li>– Identify basic network physical topologies.</li></ul>	B
12.2.4. Communication Mediums. <ul style="list-style-type: none"><li>– Identify network medium operating principles.</li></ul>	B
<b>13. BASIC COMMUNICATIONS THEORY.</b>	
13.1. Antenna. <ul style="list-style-type: none"><li>– Identify antenna operating principles.</li></ul>	B
13.2. Transmission Lines. <ul style="list-style-type: none"><li>– Identify transmission line theory of operation.</li></ul>	B
13.3. Waveguides. <ul style="list-style-type: none"><li>– Identify waveguide operating principles.</li></ul>	B
13.4. Transmitters.	
13.4.1. Amplitude Modulation (AM). <ul style="list-style-type: none"><li>– Identify AM transmitter operating principles.</li></ul>	B
13.4.2. Frequency Modulation (FM). <ul style="list-style-type: none"><li>– Identify FM transmitter operating principles.</li></ul>	B

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13.5. Receivers.	
13.5.1. AM Receivers.	B
– Identify AM receiver operating principles.	
13.5.2. FM Receivers.	B
– Identify FM receiver operating principles.	
<b>14. SOLDER AND DESOLDER.</b>	
14.1. Terminal Connection.	2b
– Solder a wire to a terminal connector.	
– Desolder a wire from a terminal connector.	
14.2. Printed Circuit Board (PCB).	2b
– Solder three components to a PCB.	
– Desolder three components from a PCB.	
14.3. Multipin Connector.	2b
– Solder a tinned wire into a pin for use in a multipin connector.	
– Desolder a wire from a pin used in a multipin connector.	
14.4. Coaxial Connector.	2b
– Solder a coaxial connector center contact to a coaxial cable.	
– Desolder a coaxial connector center contact from a coaxial cable.	
<b>15. ASSEMBLE SOLDERLESS CONNECTORS.</b>	
15.1. Crimped Connection.	2b
– Splice two wires together using a crimp connector.	
– Crimp a terminal lug to a wire.	
15.2. Coaxial Connector.	2b
– Assemble a solderless coaxial cable connector to a coaxial cable.	
15.3. Multipin Connector.	2b
– Crimp a wire into a pin for use in a multipin connector.	
– Assemble a multipin connector.	

**PREFACE**

NOTE 1: Unless otherwise stated in the objective, the student may be allowed two assists from the instructor and still successfully achieve the proper level of proficiency. An instructor assist is defined as anytime an instructor must intercede to provide guidance to a student which leads to a satisfactory completion of the objective or to prevent a student from continuing in a manner which will lead to an unsatisfactory conclusion, safety violation, or damage to the equipment.

NOTE 2: All equipment related objectives are performed by following procedures from technical orders, technical manuals, or student instructional material developed by the training facility. Test equipment used throughout the course includes:

Analog Multimeter	Signal Generator
Digital Multimeter	Functional Generator
Oscilloscope	Optical Tester
Time Domain Reflectometer (TDR)	Coaxial Tester
Hand Held Bit Error Rate Tester (BERT)	Line Tester
Transmission Measurement Test Set (Fireberd 6000)	Network Probe
Transmission Impairment Measuring Set (TIMS)	Decibel Meter
Frequency Counter	Breakout Box
Fiber Optic Test Set	Disk or Tape Exerciser
Automated Test Equipment	

NOTE 3: The equipment items identified below are used as training vehicles within the skill awarding course since it incorporates most of the basic principles and procedures found in the remainder of the AFSC's equipment inventory.

Routers (Cisco 2514, 2505, 4500)	TSEC/KG-84(A)
Hubs (Cisco 1912 and 1924)	TSEC/KG-84(C)
Bridges	TSEC/KG-194
Gateways	KOI-18
Switches (3865, Promina 200, Primeswitch)	KYK-13
Modems	STX34A
Multiplexers	HNF-81
PCs (OpticPlex GX1, Dell GX110T, Assembly Kits)	
Printers	
Video Display Units (17" monitor)	
Telephones (Norstar M7310, TA-838, TA-1042)	

NOTE 4: All objective references are performed as terminal objectives. Knowledge required to perform CTS elements is inherent in each objective. This includes, but is not limited to, defining the capabilities, limitations, and theory of operation of the stated item.

NOTE 5: All objectives are trained during wartime.

1. INFORMATION PROTECTION.

TR: AFI 10-1101 [OPSEC], [COMPUSEC], AFI 31-401, AFI 33-211 [COMSEC], and AFI 33-203 [TEMPEST]; AFSSM 7011; DOD 5200.1R; applicable equipment technical manuals

1.1. OPSEC.

1.1.1. Define OPSEC.

1.1.2. Identify vulnerabilities and incidents.

1.1.3. Describe reporting procedures.

1.2. COMPUSEC

1.2.1. Define COMPUSEC.

1.2.2. Identify vulnerabilities and incidents.

1.2.3. Describe reporting procedures.

1.3. EMISSION SECURITY (TEMPEST).

1.3.1. Define TEMPEST.

1.3.2. Identify vulnerabilities and incidents of:

1.3.2.1. improperly connected communications COMSEC equipment.

1.3.2.2. improperly connected test equipment.

1.3.2.3. improperly maintained emanation suppression components.

1.3.2.4. improperly separated equipment.

1.3.3. Describe reporting procedures.

1.4. COMMUNICATIONS SECURITY (COMSEC).

1.4.1. Define COMSEC.

1.4.2. Describe COMSEC procedures used in:

1.4.2.1. Transmission Security.

1.4.2.2. Physical Security.

1.4.2.3. Cryptographic materials and equipment destruction.

1.4.2.4. Controlling access to facilities, equipment, and materials.

1.4.2.5. Safeguarding classified material.

1.4.2.6. Inventorying COMSEC equipment.

1.4.2.7. Inventorying COMSEC documents.

1.4.2.8. Page counting COMSEC documents.

1.4.3. Use AFCOMSEC Form 22 to identify special handling requirements of COMSEC material.

1.4.4. Identify crypto periods.

1.4.5. Identify vulnerabilities and incidents.

1.4.6. Describe reporting procedures.

2. OPERATIONAL RISK MANAGEMENT (ORM).

TR: AFI 91-301; AFOSHSTD 91-50; TO 00-25-232

- 2.1. State hazards associated with the AFSC.
- 2.2. State basic facts and terms about AFOSH standards for the AFSC.
- 2.3. Practice safety precautions during maintenance actions.

3. SUSTAINMENT.

TR: AFI 33-104 and 21-116; AFD 21-1; AFM 66-279 and 23-110 Vol. II Part 13; TOs 00-20-1, 00-20-2, 00-20-3, 00-35D-54, and 31 Series; applicable KAMs, LMMs, and technical manuals

- 3.1. Standard Installation Practices.
  - 3.1.1. State facts related to standard installation practices.
  - 3.1.2. Describe the importance of cable labeling and installation documentation.
  - 3.1.3. Describe wire color coding standards.
  - 3.1.4. Describe fiber optics installation concepts.
  - 3.1.5. Describe the concepts of:
    - 3.1.5.1. Grounding.
    - 3.1.5.2. Bonding.
    - 3.1.5.3. Shielding.
  - 3.1.6. Identify procedures to terminate multi-conductor cables.
  - 3.1.7. Identify procedures to construct a cable using the following connectors:
    - 3.1.7.1. Multi pin.
    - 3.1.7.2. Modular.
    - 3.1.7.3. Coaxial.
    - 3.1.7.4. Fiber.
- 3.2. Standard Maintenance Practices.
  - 3.2.1. Describe basic troubleshooting procedures.
  - 3.2.2. State facts relating to the theory and operation of local and remote loopbacks.
  - 3.2.3. Locate information about small computer maintenance.
  - 3.2.4. Locate information about AF maintenance practices (AFI 21-116).
  - 3.2.5. Describe how to locate system components using alphanumeric designator.
  - 3.2.6. Demonstrate use of technical publications.
- 3.3. Agile Logistics (Supply, Inventory Management).
  - 3.3.1. State facts about agile logistics.
  - 3.3.2. Describe the flow of parts (Depot/Commercial vendor).
  - 3.3.3. Describe the technician's role in agile logistics.
- 3.4. Documentation.
  - 3.4.1. State facts about the purpose and use of the maintenance data collection systems.
  - 3.4.2. Input maintenance data collection information into automated system.

- 3.4.3. State facts about the purpose and use of the material deficiency reporting system.
- 3.4.4. State facts about the purpose and use of preventive maintenance inspection and equipment status reporting.
- 3.4.5. Identify the procedures used to process and control materiel.
- 3.4.6. Locate parts information using commercial manuals, technical orders, and Fed Log.

4. COMMUNICATIONS PRINCIPLES.

TR: TO 31Z-10-20 and 31-1-141-Series; MIL STD 188-114A

- 4.1. State facts relating to the following:
  - 4.1.1. Amplitude Modulation (AM).
  - 4.1.2. Frequency Modulation (FM).
  - 4.1.3. Phase Modulation (PM).
  - 4.1.4. Pulse code modulation (PCM).
  - 4.1.5. Continuously variable slope delta (CVSD) modulation.
  - 4.1.6. Conditioned Di-Phase (CDI).
  - 4.1.7. Bandwidth.
  - 4.1.8. Light-wave communications.
- 4.2. State facts relating to the theory and operation of the following Interface Standards:
  - 4.2.1. EIA/RS-232.
  - 4.2.2. EIA/RS-449.
  - 4.2.3. EA/RS-422.
  - 4.2.4. EIA/RS-423.
  - 4.2.5. EIA-530.
  - 4.2.6. EIA-568.
  - 4.2.7. V.35.
  - 4.2.8. MIL STD 188-114A.
- 4.3. State facts relating to the theory and operation of communications protocols/addressing.

5. INFORMATION TRANSPORT CONCEPTS.

TR: TOs 31Z-10-20 and 31-1-141-Series; MIL STD 188-114A

- 5.1. State facts relating to the theory and operation of the following:
  - 5.1.1. Network Topologies (Star, Ring, Bus, etc.).
  - 5.1.2. Network Types (LAN, WAN, VPN).
- 5.2. State facts relating to the theory and operation of the following information transport devices.
  - 5.2.1. Routers.
  - 5.2.2. Hubs (Concentrators).
  - 5.2.3. Bridges.
  - 5.2.4. Gateways.
  - 5.2.5. Switches:

- 5.2.5.1. Circuit switching.
  - 5.2.5.2. Message switching.
  - 5.2.5.3. Packet switching.
  - 5.2.5.4. Asynchronous transfer mode (ATM).
  - 5.2.6. Modems.
    - 5.2.6.1. Error control.
      - 5.2.6.1.1. Error detection.
      - 5.2.6.1.2. Error correction.
    - 5.2.6.2. Flow control.
      - 5.2.6.2.1. Hardware flow control.
      - 5.2.6.2.2. Software flow control.
  - 5.2.7. Multiplexers:
    - 5.2.7.1. Frequency division multiplexing (FDM).
    - 5.2.7.2. Time division multiplexing (TDM).
    - 5.2.7.3. Multiplexing at T1 rate and higher.
  - 5.2.8. Encryption.
    - 5.2.8.1. Cryptology, encryption, and decryption.
    - 5.2.8.2. Common encryption devices used in AF and DoD communication systems.
    - 5.2.8.3. Common encryption methods.
      - 5.2.8.3.1. Data.
      - 5.2.8.3.2. Voice.
      - 5.2.8.3.3. Bulk.
      - 5.2.8.3.4. Public/private key (FORTEZZA).
  - 5.2.9. Network interface card.
  - 5.3. Identify network management concepts and responsibilities.
  - 5.4. State facts relating to the theory and operation of data terminal equipment/data communications equipment (DTE/DCE).
6. TRANSMISSION MEDIA.  
TR: TO 31Z-10-20 and 31-1-141-Series; MIL STD 188-114A
- 6.1. State basic facts relating to the theory and operation of wireless transmission media.
    - 6.1.1. Microwave.
    - 6.1.2. Satellite.
    - 6.1.3. Radio.
    - 6.1.4. Laser.
  - 6.2. State basic facts relating to the theory and operation of landline transmission media.
    - 6.2.1. Copper cables.
    - 6.2.2. Coaxial cables.

6.2.3. Fiber optic cable.

7. AIR FORCE MISSION SYSTEMS.

7.1. State facts about current major network systems.

8. INFORMATION SYSTEMS SUSTAINMENT (Computers).

TR: User's Manuals

8.1. Hardware.

8.1.1. Processors.

8.1.1.1. Perform operational check of processor.

8.1.1.2. Isolate malfunction to line replaceable unit (LRU).

8.1.1.3. Remove and replace LRU.

8.1.2. Memory.

8.1.2.1. Perform operational check of memory.

8.1.2.2. Isolate malfunction to LRU.

8.1.2.2. Remove and replace LRU.

8.1.3. Data storage device (DSD).

8.1.3.1. Perform operational check of DSD.

8.1.3.2. Isolate malfunction to LRU.

8.1.3.3. Remove and replace LRU.

8.1.4. Power supplies.

8.1.4.1. Perform operational check of power supplies.

8.1.4.2. Isolate malfunction to power supply.

8.1.4.3. Remove and replace power supply.

8.2. Peripheral Devices.

8.2.1. Keyboards.

8.2.1.1. Perform operational check of keyboard.

8.2.1.2. Isolate malfunction to LRU.

8.2.1.3. Remove and replace LRU.

8.2.2. Printers.

8.2.2.1. Perform operational check of printer.

8.2.2.2. Isolate malfunction to LRU.

8.2.2.3. Remove and replace LRU.

8.2.2.4. Configure.

8.2.3. Video display unit.

8.2.3.1. Perform operational check of video display unit.

8.2.3.2. Isolate malfunction to LRU.

8.2.3.3. Remove or replace LRU.

8.2.3.4. Align display unit.

### 8.3. Software Principles (UNIX, Windows, Windows NT).

8.3.1. Identify the basic architecture of the operating system.

8.3.2. Install/configure operating systems.

8.3.3. State facts about the relationship between the operating system and application software.

8.3.4. Identify differences between hardware and software faults.

### 9. ENCRYPTION DEVICES (KG-84, KG-194).

TR: LMM-5, KAO-184 [TSEC/KG-84( )], KAM-529, KAM-530 [TSEC/KG-194], KAM-330, and LMM-8 [COMMON FILL DEVICES]

9.1. TSEC/KG-84( ) series limited maintenance.

9.1.1. State basic facts pertaining to the theory of operation of the TSEC/KG-84( ).

9.1.2. Configure (strap) the KG-84( ).

9.1.3. Perform operational check of KG-84.

9.1.4. Load Traffic Encryption Key (TEK).

9.1.5. Load Key Encryption Key (KEK).

9.1.6. Manual Rekey (OTAR).

9.1.7. Automatic Rekey (AK/Net OTAR).

9.1.8. Manual Cooperative Key Transfer (MK/RV).

9.1.9. Zeroize key.

9.1.10. Isolate malfunctioning LRU.

9.1.11. Remove and replace LRU.

9.1.12. Identify facts concerning authorized equipment modifications.

9.1.13. Inspect equipment for authorized modifications.

9.2. TSEC/KG-194 Limited Maintenance.

9.2.1. Perform operational check of KG-194.

9.2.2. Load Traffic Encryption Key (TEK).

9.2.3. Load Firefly Key.

9.2.4. Zeroize Key.

9.2.5. Configure (strap) the KG-194 for the following:

9.2.5.1. Operational test configuration.

9.2.5.2. On-line configuration.

9.2.6. Isolate malfunctioning LRU.

9.2.7. Remove and replace LRU.

9.3. Common Fill Devices.

9.3.1. Perform a KOI-18 transfer.

9.3.2. Perform a KYK-13 transfer.

9.3.3. Perform a KYX-15 transfer.

9.3.4. Perform a CYZ-10/A transfer.

10. DEPLOYABLE SWITCHING SYSTEMS.

TR: Applicable Technical Orders

- 10.1. Identify facts relating to the various types of deployable switching systems.
- 10.2. Perform operational check of switching equipment.
- 10.3. Isolate malfunction to LRU.
- 10.4. Remove and replace LRU.

11. INFORMATION TRANSPORT DEVICES (Modems, Multiplexers).

TR: User's Manual [Modem] and TO 31R2-4-538-1 [Multiplexer]

11.1. Modems.

- 11.1.1. Configure modem for operation.
- 11.1.2. Perform operational check of modem.
- 11.1.3. Isolate malfunction to LRU.
- 11.1.4. Remove and replace LRU.

11.2. Multiplexer.

- 11.2.1. Identify facts about Multiplexer theory of operation.
- 11.2.2. Configure Multiplexer for operation.
- 11.2.3. Isolate malfunctions to LRU.
- 11.2.4. Remove and replace LRU.

12. NETWORK SUSTAINMENT.

TR: TO 31-1-141-Series

12.1. Interface Cables.

- 12.1.1. Fabricate twisted pair interface cables.
- 12.1.2. Describe tip-ring reversal.

12.2. Configure equipment in a network.

12.3. Perform network operational check.

12.4. Perform a key change operation on a network.

12.5. Configure the network to operate in the following modes:

- 12.5.1. Synchronous.
- 12.5.2. Asynchronous.

12.6. Perform the following patch panel applications:

- 12.6.1. Trace network signals.
- 12.6.2. Perform system loop-backs.
- 12.6.3. Restore circuit operation.

12.7. Perform a Bit Error Rate Test.

- 12.7.1. One tester/single system with local loop-back.
- 12.7.2. Two tester/point-to-point system.

12.8. Identify common causes of transmission impairment in analog and digital circuits.

12.8.1. Noise.

12.8.2. Timing.

12.8.3. Line loss.

12.9. Trace the following network signals:

12.9.1. Data.

12.9.2. Timing.

12.9.3. Control.

12.10. Isolate faulty network equipment.

**BEHAVIORAL FORMAT CTG CODING SYSTEM**

Each CTG element is written as a behavioral statement. The detail of the statement and verb selection reflects the level of training provided.

Code	Definition
K	Subject Knowledge Training - The verb selection identifies the individual's ability to identify facts, state principles, analyze, or evaluate the subject.
-	When this code is used in the OJT Upgrade Column it indicates that the certification or qualification on this task is a local determination. When this code is used in the CDC Column it indicates that no training for this subject is provided in the CDCs.
X	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level. This code indicates that training to satisfy this requirement is either provided through OJT, CDCs, or a combination of OJT and CDCs.
X*	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level if the assigned duty position is responsible to maintain/operate the equipment or system indicated as assigned by the local work center supervisor. This code indicates that training to satisfy this requirement is normally provided through OJT.

**CFETP versus AFJQS task coding.** AFJQSs/AFQTPs annotated in the CFETP with an “X” denotes the AFJQS is mandatory. Within the AFJQS are individual tasks that are coded either “X” or “X\*.” If the tasks are coded “X,” they are mandatory. If coded “X\*,” they are duty position specific.

The identification blocks listed below are to be used when the trainer is other than the trainee's immediate supervisor.

<i>THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY</i>		
Personal Data - Privacy Act of 1974		
PRINTED NAME OF TRAINEE ( <i>Last, First, Middle Initial</i> )	INITIALS ( <i>Written</i> )	SSAN
PRINTED NAME OF CERTIFYING OFFICIAL AND WRITTEN INITIALS		
N/I	N/I	

## PREFACE

NOTE 1: Users are responsible for annotating technical references to identify current references pending CTG revision.

NOTE 2: AFJQS 2EXXX-200B, 2EXXX C-E Enlisted Specialty Training is mandatory for use in conjunction with this CTG. It sets the Air Force standard for qualification and certification for the following subject areas:

- Career Progression Information
- Information Security (INFOSEC)
- Communications Security (COMSEC)
- Protect MAJCOM/FOA Critical Mission Information
- Physical Security
- Electronic Emission Security (TEMPEST)
- Electronic Warfare
- Operational Risk Management
- Training
- Work Center Administration
- Operator Care of Assigned Government Vehicles
- Supply
- Technical Orders (TO) and Technical Publications
- Supervision
- C-E Equipment Maintenance Management
- C-E Equipment Maintenance System Inspecting, Reporting, and Forms

NOTE 3: Equipment/system knowledge and/or performance tasks are defined in the AFJQS. AFJQS items set the standard for qualification and certification and are mandatory for use in conjunction with this CTG. AFQTPs listed in the CTG are generally handbooks which do not have task listings, therefore tracking through the Core Automated Maintenance System (CAMS) is not possible. Annotate completion of these products on AF Form 623A.

NOTE 4: When an AFJQS is loaded into CAMS, letters in the AFJQS identifier are converted to the number representing each letter's alphabetical position (e.g., 200B would be loaded as 200.2). To save space, individual AFJQS tasks are not normally listed within the CTG. However, if a CTG task is closely related to an AFJQS task or area, the AFJQS task/heading is listed (e.g., 200.2.12) and the related CTG task is listed under it (e.g., 200.2.12.75). To prevent potential task numbering conflicts between AFJQS tasks and subordinate CTG tasks, subordinate CTG tasks start with the number 75. This creates gaps in the final task numbering sequence, but integrates related CTG and AFJQS tasks so they will be listed on your training documents in the same area and in order.

NOTE 5: When loading AFJQS tasks into the CAMS database, tasks are loaded as STS not 797 items.

NOTE 6: If not formerly qualified (DD Form 1435) or the last date on the DD Form 1435 is more than three years old, a Specialty Training Package (STP) must be completed as part of qualification training prior to certification (Reference AFI 21-109, para 6.1.1.). STPs will be used unless tech school provided the training.

NOTE 7: These tasks are COMSEC QTPs for strapping only. Strapping is also covered in the STP for limited and depot maintenance personnel. COMSEC QTPs listed in the CTG do not have task listings therefore tracking through the Core Automated Maintenance System (CAMS) is not possible. Annotate completion of these products on AF Form 623A.

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
1. ELECTRONIC PRINCIPLES (EP). TR: EP CBT and TO31-1-141 Series							
1.1. Identify principles and capabilities of electronic devices and circuits	-	K					
2. TEST EQUIPMENT. TR: TO 33K-1-100, Applicable test equipment technical orders							
2.1. Identify principles, capabilities, and limitations of the following test equipment items:							
2.1.1. Analog oscilloscope.	-	K					
2.1.2. Digital oscilloscope.	-	K					
2.1.3. Spectrum analyzer.	-	K					
2.1.4. Analog multimeter.	-	K					
2.1.5. Digital multimeter.	-	K					
2.1.6. Power meter.	-	K					
2.1.7. Optical time domain reflectometer.	-	K					
2.1.8. Time domain reflectometer.	-	K					
2.1.9. Bit error rate test set.	-	K					
2.1.10. RF signal generator.	-	K					
2.1.11. Frequency counter.	-	K					
2.2. Perform equipment maintenance using the following test equipment/devices:							
2.2.1. Analog multimeter.	X*	-					
2.2.2. Digital multimeter.	X*	-					
2.2.3. Oscilloscope.	X*	-					
2.2.4. Signal generator.	X*	-					
2.2.5. Time domain reflectometer.							
2.2.5.1. Optical.	X*	-					
2.2.5.2. Coaxial.	X*	-					
2.2.6. Line Testers.							
2.2.6.1. Bit error rate tester (BERT).	X*	-					
2.2.6.2. Transmission measurement test set (Fireberd 6000).	X*	-					
2.2.6.3. Protocol analyzer.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
2.2.6.4. Transmission impairment measuring set (TIMS).	X*	-					
2.2.6.5. Network probe.	X*	-					
2.2.6.6. Decibel meter.	X*	-					
2.2.7. Frequency counter.	X*	-					
2.2.8. Fiber optic test set.	X*	-					
2.2.9. Disk or tape exerciser.	X*	-					
2.2.10. Breakout box.	X*	-					
2.2.11. Automated test equipment.	X*	-					
2.2.12. Hand held photometer.	-	-					
2.2.13. RMS meter.	-	-					
2.2.14. Load bank.	-	-					
2.2.15. Decade capacitor.	-	-					
2.2.16. Decade resistor.	-	-					
2.2.17. Pulse generator.	-	-					
2.2.18. Digital display indicator test set.	-	-					
2.2.19. Line printer test set.	-	-					
2.2.20. Color monitor test set.	-	-					
2.2.21. Audio oscillator.	-	-					
2.2.22. Vacuum tube voltmeter.	-	-					
2.2.23. Differential voltmeter.	-	-					
2.2.24. Portable telephone test set.	-	-					
2.2.25. Specialized test equipment.	-	-					
2.2.26. Logic analyzer.	-	-					
2.2.27. Card tester HMC-193.	-	-					
3. STANDARD MAINTENANCE PRACTICES.							
3.1. Describe basic troubleshooting procedures.	X*	-					
3.2. Interpret results of diagnostic programs.	X*	-					
3.3. Interpret diagrams for fault isolation.	X*	-					
3.4. Locate elements such as unit, module, row, column, component, pin, connector, or test point using alphanumeric designator.	X*	-					
3.5. Solder and desolder electronic equipment components.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
4. COMPUTER SECURITY (COMPUSEC). TR: AFI 33-202 and AFQTP 2EXXX-202D							
4.1. Define COMPUSEC.	X	-					
4.2. Identify vulnerabilities and incidents.	X	-					
4.3. Describe data protection techniques.	X	-					
4.4. Describe basic countermeasures.	X	-					
4.5. Describe reporting procedures.	X	-					
4.6. Explain malicious logic.	X	-					
4.7. Describe methods of malicious logic protection.	X	-					
4.8. Describe TEMPEST suppression techniques.	X*	-					
4.9. Perform TEMPEST maintenance.	X*	-					
5. STANDARD INSTALLATION PRACTICES. TR: TOs 31-10-7, 31-10-11, 31-10-13, 31-10-24, 31W-3-6, 31W-1-102, 31W2-4-330 series, and 31W3-10-20; TIA/EIA-568A & 569; AFI 32-1065; AFJQS 2EXXX-202B							
5.1. State facts related to the following practices:							
5.1.1. Installation.	X	K					
5.1.2. Configuration.	X	K					
5.1.3. Interconnection.	X	K					
5.1.4. Inspection.	X	K					
5.2. Explain the importance of cable labeling and installation documentation.	X	K					
5.3. Describe wire color coding standards.	X*	K					
5.4. Describe fiber optics installation concepts.	X*	K					
5.5. Describe the concepts of:							
5.5.1. Grounding.	X	K					
5.5.2. Bonding.	X	K					
5.5.3. Shielding.	X	K					
5.5.4. Lightning protection.	X	K					
5.6. Remove or install equipment grounds.	X*	-					
5.7. Check quality of equipment grounds.	X*	-					
5.8. Identify procedures to terminate multi-conductor cables.	X*	-					
5.9. Construct the following cable connectors:							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
5.9.1. Multi pin.	X*	-					
5.9.2. Modular.	X*	-					
5.9.3. Coaxial.	X*	-					
5.9.4. Fiber.	X*	-					
5.10. Isolate and repair malfunctions in cable assemblies.	X*	-					
6. COMMUNICATIONS PRINCIPLES. TR: TO 31-1-141 Series							
6.1. State facts relating to the following:							
6.1.1. Amplitude Modulation (AM).	-	K					
6.1.2. Frequency Modulation (FM).	-	K					
6.1.3. Phase Modulation (PM).	-	K					
6.1.4. Pulse Code Modulation (PCM).	-	K					
6.1.5. Bandwidth.	-	K					
6.1.6. Lightwave communications.	-	K					
6.1.7. Asynchronous/synchronous communication modes.	-	K					
6.1.8. Error detection and correction.	-	K					
6.2. State facts relating to the theory of operation of the following interface standards and protocols:							
6.2.1. EIA/RS-232C.	-	K					
6.2.2. EIA/RS-449.	-	K					
6.2.3. EIA/RS-422.	-	K					
6.2.4. EIA/RS-423.	-	K					
6.2.5. EIA-530.	-	K					
6.2.6. EIA-568.	-	K					
6.2.7. V.35.	-	K					
6.2.8. MIL STD 188-114A.	-	K					
6.2.9. TCP/IP. 6TR: CBT Volume--Microsoft TCP/IP on Windows NT 4.0: Introduction to TCP/IP and IP Addressing <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>	-	-					
6.2.10. X.25/1822.	-	-					
6.2.11. GOSIP.	-	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
6.3. State facts relating to the theory of operation of communication protocols/addressing. TR: CBT Volume--Internetworking Essentials: Introduction to Common Networking Protocols and Internetworking Overview <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>	-	-					
6.4. State facts relating to the following switching methods: TR: CBT Volume--WAN Technologies <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
6.4.1. Circuit.	-	-					
6.4.2. Message.	-	-					
6.4.3. Packet.	-	-					
6.4.4. Asynchronous transfer mode (ATM). TR: CBT Volume--WAN Technologies: ATM Principles <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>	-	-					
6.5. State facts relating to the following multiplexing methods: TR: CBT Volume--Internetworking Essentials: 1) Data Communications: Signals and Systems 2) WAN Technologies <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
6.5.1. Frequency Division Multiplexing (FDM).	-	-					
6.5.2. Time Division Multiplexing (TDM).	-	-					
6.5.3. T1 rate and higher.	-	-					
6.6. State facts relating to the following cryptology methods:							
6.6.1. Secret key/symmetrical (traditional cryptographic equipment).	-	-					
6.6.2. Public key/asymmetrical (FORTEZZA).	-	-					
7. INFORMATION TRANSPORT CONCEPTS.							
7.1. State facts relating to the theory of operation of the following network configurations: TR: CBT Volume--Novell Networking Technologies: Concepts and Services; CBT Volume--Internetworking Essentials: LAN Fundamentals; and CBT Volume--LAN Technologies: LAN Topologies and Techniques at <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
7.1.1. Network topologies (Star, Ring, Bus, etc.).	X	K					
7.1.2. Network types (LAN, WAN, VPN).	X	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
7.2. State facts relating to the theory of operation of the following information transport devices: TR: CBT Volume--Internetworking Essentials: Fundamentals of Internetworking; CBT Volume--LAN Technologies: LAN Media and Components <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
7.2.1. Routers.	X	K					
7.2.2. Hubs (concentrators).	X	K					
7.2.3. Bridges.	X	K					
7.2.4. Gateways.	X	K					
7.2.5. Switches.	X	K					
7.2.6. Data terminal equipment (DTE).	X	K					
7.2.7. Data communications equipment (DCE).							
7.2.7.1. Modems.	X	K					
7.2.7.2. Data service units/channel service units (DSU/CSU).	X	K					
7.2.8. Multiplexers.	X	K					
7.2.9. Network interface card	X	K					
7.2.10. Common encryption devices used in AF and DOD communication networks.	X	K					
7.2.11. Integrated Digital Network Exchange (IDNX).	X	K					
8. EXPEDITIONARY COMMUNICATIONS CONCEPTS. TR: <a href="https://aefcenter.acc.af.mil">https://aefcenter.acc.af.mil</a>							
8.1. Identify basic concepts of the Aerospace Expeditionary Force (AEF) deployment process. TR: AFI 10-400, Chap 1 thru 3	X	K					
8.2. Explain basic concepts of Unit Type Codes (UTC) and Force Packaging as it relates to the AEF tasking process. TR: AFMAN 10-401, Chap 4 thru 6; <a href="http://www.fas.org/man/dod-101/usaf/docs/cwpc/4200-FO.htm">http://www.fas.org/man/dod-101/usaf/docs/cwpc/4200-FO.htm</a>	X	K					
8.3. Describe deployment procedures. TR: AFMAN 10-100; MAJCOM and Local Directives							
8.3.1. Pre-deployment.	X	K					
8.3.2. Employment.	X	K					
8.3.3. Post deployment.	X	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
8.3.4. Recovery.	X	K					
8.4. Identify deployable communications systems associated with this AFSC.	X	K					
8.5. Accomplish the following mobility procedures: TR: Applicable MAJCOM directives; TOs 00-20-series							
8.5.1. Pre-deployment inspections.	X*	-					
8.5.2. Air mobility equipment preparation.	X*	-					
8.5.3. Road mobility equipment preparation.	X*	-					
8.5.4. Post-deployment turn around.	X*	-					
9. ELECTRICAL POWER SYSTEMS.							
9.1. Describe the application of the following types of uninterruptible power supplies:							
9.1.1. Batteries. TR: AFJQS 3E0X2-214D, Module 1	X*	-					
9.1.2. Switched electrical power systems. TR: AFQTP 3E0X2-213YA, Modules 1 and 2	X*	-					
9.2. Describe the application of the following types of generators:							
9.2.1. Fixed.	X*	-					
9.2.2. Mobile/tactical.	X*	-					
9.2.3. 60 Hertz.	X*	-					
9.2.4. 400 Hertz.	X*	-					
9.3. Describe commercial power requirements.	X*	-					
9.4. Describe power phasing requirements.	X*	-					
10. TRANSMISSION MEDIA CONCEPTS. TR: TO 31-1-141 Series							
10.1. Wireless.							
10.1.1. Microwave.	X*	K					
10.1.2. Satellite.	X*	K					
10.1.3. Radio.	X*	K					
10.1.4. Laser.	X*	K					
10.2. Land line.							
10.2.1. Copper cables.	X*	K					
10.2.2. Coaxial cables.	X*	K					
10.2.3. Fiber optic cable.	X*	K					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
11. INFORMATION SYSTEMS CONCEPTS.							
11.1. Describe the function and characteristics of the following hardware/peripheral devices:							
11.1.1. Processors.	X	K					
11.1.2. Memory.	X	K					
11.1.3. Data storage devices.	X	K					
11.1.4. Power supplies.	X	K					
11.1.5. Keyboards.	X	K					
11.1.6. Printers.	X	K					
11.1.7. Video display unit.	X	K					
11.2. Software Principles/Operating Systems (UNIX, Windows, Windows NT, MS DOS, Novell). TR: CBT Volume--Internet and Intranet Infrastructure: Unix: Overview, Essentials of Windows 95; CBT Volume--Microsoft Windows NT: Essentials <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
11.2.1. Identify the basic architecture of the operating system.	X*	K					
11.2.2. Describe relationship between operating systems and application software.	X*	K					
11.2.3. Install/configure operating systems. TR: MAJCOM and local procedures	X*	-					
11.2.4. Identify basic characteristics of computer languages. TR: Applicable Air Force CBTs <a href="http://afcbt.den.disa.mil">http://afcbt.den.disa.mil</a>							
11.2.4.1. High order languages.	X*	-					
11.2.4.2. Assembler languages.	X*	-					
11.2.4.3. Machine code.	X*	-					
11.2.4.4. Object-oriented languages.	X*	-					
12 OPERATE COMMON FILL DEVICES.							
12.1. Perform a KOI-18 transfer.	X*	-					
12.2. Perform a KYK-13 transfer.	X*	-					
12.3. Perform a KYX-15 transfer.	X*	-					
11.4. Perform a CYZ-10/A transfer.	X*	-					
13. INFORMATION TRANSPORT DEVICES (MODEMS, MULTIPLEXERS).							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
13.1. Modems.							
13.1.1. Configure for operation.	X*	-					
13.1.2. Perform operational check.	X*	-					
13.1.3. Isolate malfunction to LRU.	X*	-					
13.1.4. Remove and replace LRU.	X*	-					
13.2. Integrated Digital Network Exchange (IDNX).							
13.2.1. Configure for operation.	X*	-					
13.2.2. Perform operational check.	X*	-					
13.2.3. Isolate malfunction to LRU.	X*	-					
13.2.4. Remove and replace LRU.	X*	-					
14. NETWORK SUSTAINMENT.							
14.1. Perform network operational check.	X*	-					
14.2. Perform a change key operation on a network.	X*	-					
14.3. Configure the equipment for synchronous operation.	X*	-					
14.4. Configure the equipment for asynchronous operation.	X*	-					
14.5. Perform the following patch panel applications:							
14.5.1. Trace network signals.	X*	-					
14.5.2. Perform system loopbacks.	X*	-					
14.5.3. Restore circuit operation.	X*	-					
14.6. Perform a bit error rate test.							
14.6.1. One test set/single system with local loopback.	X*	-					
14.6.2. Two test sets/point-to-point.	X*	-					
14.7. Identify common causes of transmission impairment in analog and digital circuits.							
14.7.1. Noise.	-	K					
14.7.2. Timing.	-	K					
14.7.3. Line loss.	-	K					
14.8. Trace the following network signals:							
14.8.1. Data.	X*	-					
14.8.2. Timing.	X*	-					
14.8.3. Control.	X*	-					
14.9. Isolate faulty network equipment.	X	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
15. STATE FACTS RELATING TO THE FOLLOWING COMPUTER AND SWITCHING SYSTEMS.							
15.1. Joint Surveillance System (JSS). TR: <a href="http://www.fas.org/nuke/guide/usa/airdef/an-fyq-93.htm">http://www.fas.org/nuke/guide/usa/airdef/an-fyq-93.htm</a>	X	K					
15.2. Air Force Mission Support System. TR: <a href="http://www.fas.org/man/dod-101/sys/ac/equip/afmss.htm">http://www.fas.org/man/dod-101/sys/ac/equip/afmss.htm</a>	X	K					
15.3. Modular Control Element (MCE). TR: <a href="http://www.fas.org/man/dod-101/sys/ac/equip/qtacs.htm">http://www.fas.org/man/dod-101/sys/ac/equip/qtacs.htm</a>	X	K					
15.4. Command and Control Aircraft.							
15.4.1. Airborne Warning and Control System (AWACS). TR: <a href="http://www.fas.org/man/dod-101/sys/ac/e-3.htm">http://www.fas.org/man/dod-101/sys/ac/e-3.htm</a>	X	K					
15.4.2. Airborne Battlefield Command and Control Center (ABCCC). TR: <a href="http://www.fas.org/man/dod-101/sys/ac/ec-130e.htm">http://www.fas.org/man/dod-101/sys/ac/ec-130e.htm</a>	X	K					
15.4.3. Unmanned Aerial Vehicles (UAV). TR: <a href="http://www.fas.org/irp/program/collect/uav_tcs.htm">http://www.fas.org/irp/program/collect/uav_tcs.htm</a>	X	K					
15.5. Strategic Communications System (STRATCOM). TR: <a href="http://www.fas.org/nuke/guide/usa/c3i/cvpmrjan/sld001.htm">http://www.fas.org/nuke/guide/usa/c3i/cvpmrjan/sld001.htm</a>	X	K					
15.6. Tactical Voice and Data Switches.							
15.6.1. AN/TTC-39, Circuit Switch. TR: <a href="http://www.fas.org/man/dod-101/sys/land/an-ttc-39.htm">http://www.fas.org/man/dod-101/sys/land/an-ttc-39.htm</a>	X	K					
15.6.2. SB-3865, Automatic Telephone Switchboard. TR: <a href="http://www.fas.org/man/dod-101/sys/ac/equip/sb-3865.htm">http://www.fas.org/man/dod-101/sys/ac/equip/sb-3865.htm</a>	X	K					
15.6.3. SB-3614, Automatic Telephone Switchboard. TR: <a href="http://www.fas.org/man/dod-101/sys/ac/equip/sb-3614.htm">http://www.fas.org/man/dod-101/sys/ac/equip/sb-3614.htm</a>	X	K					
15.6.4. Theater Deployable Communications (TDC). TR: <a href="http://www.fas.org/man/dod-101/sys/ac/equip/docs/tdcbrf/sld001.htm">http://www.fas.org/man/dod-101/sys/ac/equip/docs/tdcbrf/sld001.htm</a>	X	K					
15.7. Intel Systems.							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
15.7.1. NSANET Network Control Center. TR: <a href="http://wwwmil.keesler.af.mil/333trs/cflight/cis.htm">http://wwwmil.keesler.af.mil/333trs/cflight/cis.htm</a>	X	K					
15.7.2. Distributed Common Ground Station (DCGS). TR: <a href="https://aiaweb.aia.af.mil/homepages/lq/">https://aiaweb.aia.af.mil/homepages/lq/</a>	X	K					
15.7.3. Electronic System Security Assessment (ESSA). TR: : <a href="https://aiaweb.aia.af.mil/homepages/lq/">https://aiaweb.aia.af.mil/homepages/lq/</a>	X	K					
15.7.4. Ground Data Processing System (GDPS). TR: : <a href="https://aiaweb.aia.af.mil/homepages/lq/">https://aiaweb.aia.af.mil/homepages/lq/</a>	X	K					
15.8. Defense Support Program (DSP). TR: <a href="http://www.fas.org/spp/military/program/nssrm/initiatives/dsp_dod.htm">http://www.fas.org/spp/military/program/nssrm/initiatives/dsp_dod.htm</a>	X	K					
15.9. Defense Dissemination System (DDS). TR: <a href="http://www.fas.org/irp/program/disseminate/dds.htm">http://www.fas.org/irp/program/disseminate/dds.htm</a>	X	K					
15.10. Cheyenne Mountain Complex (CMC). TR: <a href="http://www.fas.org/nuke/guide/usa/c3i/cmc.htm">http://www.fas.org/nuke/guide/usa/c3i/cmc.htm</a>	X	K					
16. MISSILE NUCLEAR SURETY PROGRAM.							
16.1. Explain the principles of the AF Nuclear Surety Program.	X*	-					
16.2. Identify the purpose of the AF Two Man concept.	X*	-					
16.3. Perform launch facility/soft support building entry, departure, and emergency isolation procedures. TR: TO 21M-LGM30G-2-10	X*	-					
17. COMMON MISSILE COMMUNICATIONS EQUIPMENT MAINTENANCE.							
17.1. Maintain telephone switches/key systems.	-	-					
17.2. Maintain system telephones.	-	-					
200. AIR FORCE JOB QUALIFICATION STANDARDS APPLICABLE TO AFSC 2E2X1. TR: AFI 21-116, 36-2233, CFETP 2E2X1 (See Notes 3 and 4)							
200.2. AFJQS 2EXXX-200B, 2EXXX C-E Enlisted Specialty Training. (See Note 2)	X						
200.2.3. COMMUNICATIONS SECURITY (COMSEC).							
200.2.3.75. State facts relating to Transmission Security (TRANSEC). TR: AFSSI 4100	X	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
200.2.3.76. Use AFCOMSEC Form 22 to identify special handling requirements of COMSEC. TR: AFI 33-211; AFCOMSEC Form 22	X*	-					
200.2.3.77. Identify crypto periods. TR: AFCOMSEC Form 22	X*	K					
200.2.6. ELECTRONIC EMISSION SECURITY (TEMPEST).							
200.2.6.75. Identify improperly connected communications COMSEC equipment. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	K					
200.2.6.76. Identify improperly connected test equipment. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	K					
200.2.6.77. Identify incorrectly maintained emanation suppression components. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	K					
200.2.6.78. Identify improperly separated equipment. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	K					
200.2.8. OPERATIONAL RISK MANAGEMENT.							
200.2.8.7. Select and use proper hand/power tools.	X*	K					
200.2.8.19. Identify hazards applicable to AFS.	X	K					
200.2.15. C-E EQUIPMENT MAINTENANCE MANAGEMENT.							
200.2.15.75. State facts relating to the Maintenance Standardization and Evaluation Program (MSEP). TR: AFI 21-116; AFQTP 2EXXX-201G; and Applicable Command Directives	-	-					
200.2.15.76. Locate information about small computer maintenance. TR: AFI 33-103	X	K					
200.2.16. C-E EQUIPMENT MAINTENANCE SYSTEM INSPECTING, REPORTING, AND FORMS.							
200.2.16.75. State facts relating to the purpose and use of the Maintenance Data Collection System.	X*	-					
200.2.16.76. Input maintenance data collection information into an automated system.	X	-					
200.2.16.77. State facts relating to the purpose and use of preventive maintenance inspections.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
200.4. AFJQS XXXXX-200D, Aerospace Expeditionary Force (AEF) Qualification Training.	X*						
201.3. AFJQS 2EXXX-201C, Corrosion Prevention and Control.	X						
201.5. AFJQS 2EXXX-201E, Communications-Electronics (C-E) Core Automated Maintenance System (CAMS).	X*						
201.7. AFJQS 2EXXX-201G, Maintenance Support.	X*						
201.8. AFJQS 2EXXX-201H, Work Center Deficiency/Discrepancy Reporting.	X*						
201.10. AFJQS 2EXXX-201J, Maintenance Training Program.	X*						
201.16. AFJQS 2EXXX-201P, Work Center Test Equipment Management.	X*						
201.20.2. AFJQS 2E2X1-201TB, Modular Control Equipment.	X*						
201.20.2.75. Describe principles, capabilities, and limitations of the following system level equipment:							
201.20.2.75.1. Data Processing Equipment (DPE).	X*	-					
201.20.2.75.2. Radar Interface Equipment (RIE).	X*	-					
201.20.2.75.3. Operator Interface Equipment (OIE).	X*	-					
201.20.2.75.4. Voice Communications Equipment (VCE).	X*	-					
201.20.2.75.5. Digital Communications Equipment (DCE).	X*	-					
201.20.2.75.6. Internal Radio Equipment (IRE).	X*	-					
201.20.2.75.7. Multiple Operation Module (OM).	X*	-					
201.22. AFJQS 2E1X1-201V, AN/FCC-100(V) Multiplexer Set.	X*	-					
201.23. AFJQS XXXXX-201W, Integrated Digital Network Exchange (IDNX-90).	X*						
201.24. AFJQS 2EXXX-201X, Engineering and Installation (EI) Quality Assurance.	X*						
202.1. AFQTP 2EXXX-202A, Electrostatic Discharge Familiarization Handbook.	X*						
202.2. AFJQS 2EXXX-202B, SIPT Electronics and Inside Plant (E&I).	X*						
202.4. AFQTP 2EXXX-202D, EI Tempest Installation Handbook.	X*						

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
202.6.2. AFJQS 300X0-202FB, Reach-All DD-140 Antenna Tower Vehicle (EI UNIT).	X*						
208.8. AFJQS 2E2X1-208H, SB3865/3614A Automatic Telephone Switchboard.	X*						
208.11. AFJQS 2E2X1-208K, CC2/CC2E Maintenance.	X*						
208.11.75. Describe the principles, capabilities, and limitations of the following AWACS computer/display principles:							
208.11.75.1. Computer Arithmetic Unit (CAU). TR: TO 1E-3A-2-46-3	X*	-					
208.11.75.2. Digital Multiplexer (DMX). TR: TO 1E-3A-2-46-3	X*	-					
208.11.75.3. Computer Controller (CC). TR: TO 1E-3A-2-46-3	X*	-					
208.11.75.4. Core Memory Unit (CMU). TR: TO 1E-3A-2-46-3	X*	-					
208.11.75.5. Monolithic Memory Unit (MMU-CC2E). TR: TO 1E-3A-2-46-5	X*	-					
208.11.75.6. Bubble Memory Unit (BMU-CC2E). TR: TO 1E-3A-2-46-5	X*	-					
208.11.75.7. Control Power Supply (CPS). TR: TO 1E-3B-2-46-3	X*	-					
208.11.75.8. CC2/CC2E. TR: TO 1E-3A-2-46-3 and 1E-3A-2-46-5	X*	-					
208.11.75.9. Magnetic Drum Storage (MDS) Unit. TR: TO 1E-3A-2-46-3	X*	-					
208.11.75.10. Hard Disk Subsystem. TR: TO 1E-3A-43-1-1S	X*	-					
208.11.75.11. Line Printer. TR: TO 1E-3A-2-46-3	X*	-					
208.11.75.12. Electronic Command Signal Programmer (ECSP). TR: TO 1E-3B-2-46-1	X*	-					
208.11.75.13. Situation Display Console (SDC). TR: TO 1E-3B-2-46-1	X*	-					
208.11.75.14. Digital Display Indicator (DDI). TR: TO 1E-3B-2-46-1	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
208.11.75.15. Electronic Systems Test Set Group (ESTSG). TR: TO 1E-3A-2-46-4	X*	-					
208.11.75.16. Power distribution.	X*	-					
208.11.75.17. Interconnecting cabling.	X*	-					
208.13. AFJQS 2E2X1-208M, AN/FYQ-93 Joint Surveillance System (JSS).	X*						
208.13.75. Identify major equipment groups of the JSS.	X*	-					
208.13.76. Describe the principles, capabilities, and limitations of the following:							
208.13.76.1. Central computer.	X*	-					
208.13.76.2. Digital switch (DS).	X*	-					
208.13.76.3. HMP1116 Controlling Processor, AN/UJK-40.	X*	-					
208.13.76.4. Programmable Peripheral Controller – A & B (PPC-A/PPC-B).	X*	-					
208.13.76.5. System Control Console Controller /System Control Console Terminal (SCCC/SCCT).	X*	-					
208.13.76.6. Display Controller (DC).	X*	-					
208.13.76.7. HMD-22 Operational Display Console.	X*	-					
208.22. AFJQS 2E2X1-208V, AN/TTC-39A(V)4 Automatic Telephone Central Office.	X*						
208.24. AFJQS 2E2X1-208X, AN/UGC-144 Communications Terminal.	X*						
208.26.1. AFJQS 2E2X1-208ZA, Strategic Automated Command and Control System (SACCS) Equipment Maintenance.	X*						
208.26.1.75. Describe the principles, capabilities, and limitations of the following:							
208.26.1.75.1. MU-741 Magazine Disc Unit (MDU). TR: TO 31S1-4-249-31	X*	-					
208.26.1.75.2. MU-740 Disc Storage Unit (DSU). TR: TO 31S1-4-249-1	X*	-					
208.26.1.75.3. MU-739 Mass Storage Unit (MSU). TR: TOs 31S2-2FSC83-1 and 31S2-2FSC83-1-1	X*	-					
208.26.1.75.4. TT-731 Line Printer Unit (LPU). TR: TO 31S5-2F-111	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
208.26.1.75.5. IP-1422 Video Display Unit (VDU)/Keyboard. TR: TO 31S5-2FSC83-101	X*	-					
208.26.1.75.6. CP-1523/CP-1524 Control Electronic Drawer (CED). TR: TO 31S1-4-250-1	X*	-					
208.26.1.75.7. ID-2295/ID-2296 Summary Fault Unit (SFU). TR: TOs 31S5-2FSC83-11 and 31S5-2FSC83-21	X*	-					
208.26.1.75.8. PP-7811 Power Supply Drawer. TR: TO 31S5-2FSC83-31	X*	-					
208.26.1.75.9. MO-1140 Modem. TR: TO 31S1-4-246-1	X*	-					
208.26.1.75.10. SB-4144 Red DC Patch. TR: TO 31S5-2FSC83-51	X*	-					
208.26.1.75.11. SB-4143 Black DC/VF Patch. TR: TO 31S5-2FSC83-41	X*	-					
208.26.1.75.12. HD-1102 Blower. TR: TOs 31S5-2FSC83-72, 31S5-2FSC83-73, and 31S5-2FSC83-74	X*	-					
208.26.1.76. Power Distribution Systems Maintenance.							
208.26.1.76.1. Perform operational checks of power distribution systems.	X*	-					
208.26.1.76.2. Isolate malfunctions to power distribution systems.	X*	-					
209.5.4. AFJQS 2EXXX-209ED, Air Force Mission Support System (AFMSS) Mission Planning Subsystem (MPS) Maintenance.	X*						
209.13. AFJQS 2E3X1-209M, MD-674(P)/G Modem, Low Speed Wire Line.	X*						
209.14. AFJQS 2E3X1-209N, Multichannel Crypto Controller (MC3).	X*						
209.18. AFJQS 2E3X1-209R, TEMPEST Model 40 Data Terminal.	X*						
209.20. AFJQS 2E3X1-209T, AN/UGC-141(V) Fixed Record Communications Teletypewriter Set.	X*						
209.21. AFJQS 2E3X1-209U, UGC-129(V)1 Teletypewriter Set (with MU-734/UGC, Magnetic Tape Unit) Organizational Maintenance.	X*						

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
210.1.1. AFQTP 2EXXX-210AA, Scope Shield II User's Handbook.	X*						
210.1.2. AFJQS 2EXXX-210AB, Scope Shield II Maintenance.	X*						
210.16. AFQTP 2EXXX-210P, Sun Series Workstations Maintenance.	X*						
210.21. AFJQS 2E2X1-210U, AN/TSQ-111 Communications Nodal Control Element.	X*						
211.2.1. AFJQS 2E2X1-211BA, WS-133B Missile Control Communications System On-Equipment Maintenance.	X*						
211.2.1.75. Describe the principles, capabilities, and limitations of the following: TR: TOs 21M-LGM30F-2-5-3, 31S8-2GSW6-2, and 31W2-2GTC-42							
211.2.1.75.1. Missile Alert Facility/Launch Facility (MAF/LF).	X*	-					
211.2.1.75.2. MAF Interphone.	X*	-					
211.2.1.75.3. LF Interphone.	X*	-					
211.2.1.75.4. Dial Lines 1 and 2.	X*	-					
211.2.1.75.5. Launch Control Center/Security Control Center (LCC/SCC).	X*	-					
211.2.1.75.6. Hardened Voice Channel (HVC).	X*	-					
211.2.1.75.7. Emergency War Order 1 (EWO-1).	X*	-					
211.2.1.75.8. Emergency War Order 2 (EWO-2).	X*	-					
211.2.1.75.9. Very High Frequency (VHF) Interface.	X*	-					
211.2.1.75.10. SACCS Cable Termination Equipment (CTE).	X*	-					
211.2.1.75.11. Voice Control Panel (VCP).	X*	-					
211.2.1.75.12. Communications Gateway Processor CP-2115/G, CP-2116/G (Rapid Message Processor/Rapid Message Processor Back-up (RMP/RMPB)).	X*	-					
211.2.1.75.13. Repeater Circuit Drawer TA-547.	X*	-					
211.2.1.75.14. Telephone Repeater TA-552.	X*	-					
211.2.1.75.15. Telephone Repeater TA-553.	X*	-					
211.2.1.75.16. Telephone Repeater TA-554.	X*	-					
211.2.1.75.17. Repeater Bridge Drawer TA-555.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
211.2.1.75.18. Telephone Set Repeater Drawer TA-592.	X*	-					
211.2.1.75.19. Selector Switch Drawer SA-1180.	X*	-					
211.2.1.75.20. Intercommunications Station LS-507A.	X*	-					
211.2.1.75.21. Fault Isolation Drawer TS-2060.	X*	-					
211.2.2. AFJQS 2E2X1-211BB, WS-133B Missile Control Communications System Off-Equipment Maintenance.	X*						
211.3.1. AFJQS 2E2X1-211CA, WS-133A Missile Control Communications System On-Equipment Maintenance.	X*						
211.3.1.75. Describe the principles, capabilities, and limitations of the following:							
211.3.1.75.1. Missile Alert Facility/Launch Facility (MAF/LF). TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.2. MAF Interphone. TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.3. LF Interphone. TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.4. Dial Lines 1 and 2. TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.5. Launch Control Center/Security Control Center (LCC/SCC). TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.6. Hardened Voice Channel (HVC). TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.7. Emergency War Order 1 (EWO-1). TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.8. Emergency War Order 2 (EWO-2). TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.9. Very High Frequency (VHF) Interface. TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.10. SACCS Cable Termination Equipment (CTE). TR: TO 21M-LGM30F-2-5-6 and 21-LG118A-2-5-2	X*	-					
211.3.1.75.11. Voice Control Panel (VCP). TR: TOs 21M-LGM30F-2-5-6 and 11G26-2-8-2	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
211.3.1.75.12. VCP Repeater. TR: TO 21M-2LGM30F-2-5-6	X*	-					
211.3.1.75.13. Rapid Message Processor/Rapid Message Processor Back-up (RMP/RMPB). TR: 31R2-2G-402	X*	-					
211.3.1.75.14. Telephone Repeater Drawer TA-463. TR: TO 31X1-8-6-2	X*	-					
211.3.1.75.15. Telephone Repeater Drawer TA-464. TR: TO 31X1-8-6-2	X*	-					
211.3.1.75.16. Telephone Repeater Drawer TA-465. TR: TO 31X1-8-6-2	X*	-					
211.3.1.75.17. Telephone Repeater Drawer TA-493. TR: TO 31W2-2GTC-42	X*	-					
211.3.1.75.18. Telephone Receiver-Repeater-Transmitter Drawer TA-501. TR: TO 31W2-2GTC-42	X*	-					
211.3.1.75.19. Telephone Line Equalizer Drawer TA-503. TR: TO 31W2-2GTC-42	X*	-					
211.3.1.75.20. Fault Locating Indicator ID-1035/ ID-1199.	X*	-					
211.3.1.75.21. Telephone Transmitter Control Panel C-3937. TR: TO 31X3-3-9-2-1	X*	-					
211.3.1.75.22. Tone Converter Drawer CV-2133. TR: TO 31W2-2GTC-42	X*	-					
211.3.1.75.23. Power Supply PP-3185/PP/3185A. TR: TO 31X1-8-6-2	X*	-					
211.3.1.75.24. Power Supply PP-3186/PP/3186A. TR: TO 31X1-8-6-2	X*	-					
211.3.1.75.25. Electrical Surge Arrestor (ESA). TR: 21M-LGM30F-2-21-9	X*	-					
211.3.2. AFJQS 2E2X1-211CB, WS-133A Missile Control Communications System Off-Equipment Maintenance (W/GSM-315).	X*						
211.4. AFJQS 2EXXX-211D, Constant Source.	X*						
213.21. AFJQS XXXXX-213U, Tactical Generator Operation for Non Power Production Personnel.	X*						

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
214.23. AFJQS XXXXX-214W, Operation and Maintenance of Tactical Environmental Control Units (ECU) by Non-3E1X1 Personnel.	X*						
600. CRYPTOGRAPHIC EQUIPMENT. <i>Prior completion of STP or formal training required for maintenance. (See Notes 6 and 8)</i>							
600.1. E6AZS2E251-000, TSEC/KG-30 SERIES LIMITED MAINTENANCE. TR: KAO-137; KAM-243, -244, -287, and -330							
600.1.1. Configure for system operation.	X*	-					
600.1.2. Perform system operation check.	X*	-					
600.1.3. Isolate faulty system equipment item.	X*	-					
600.1.4. Perform system restoration procedures.	X*	-					
600.2. E6AZS2E251-001, TSEC/KG-81 LIMITED MAINTENANCE. TR: KAO-179; KAM-330 and KAM-366A							
600.2.1. Configure for system operation.	X*	-					
600.2.2. Perform systems operation check.	X*	-					
600.2.3. Isolate faulty system equipment item.	X*	-					
600.2.4. Perform system restoration procedures.	X*	-					
600.3. COMSEC QTP ANT 8101, TSEC/KG-81 STRAPPING. (See Note 7)	X*	-					
600.4. E6AZS2E251-002, TSEC/KG-84 SERIES LIMITED MAINTENANCE. TR: KAO-184; KAM-330; LMM-2A and LMM-5A							
600.4.1. Configure for system operation.	X*	-					
600.4.2. Perform system operation check.	X*	-					
600.4.3. Isolate faulty system equipment item.	X*	-					
600.4.4. Perform system restoration procedures.	X*	-					
600.5. COMSEC QTP AMT 8401, TSEC/KG-84 STRAPPING. (See Note 7)	X*	-					
600.6. E6AZS2E251-003, TSEC/KI-1 SERIES LIMITED MAINTENANCE. TR: KAM-225E, KAM-528B, and KAM-330							
600.6.1. Configure for system operation.	X*	-					
600.6.2. Perform system operation check.	X*	-					
600.6.3. Isolate faulty system equipment item.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.6.4. Perform system restoration procedures.	X*	-					
600.7. E6AZS2E251-005, TSEC/KY-57/58 LIMITED MAINTENANCE. TR: KAO-168; KAM-330, KAM-336, and KAM-337							
600.7.1. Configure for system operation.	X*	-					
600.7.2. Perform system operation check.	X*	-					
600.7.3. Isolate faulty system equipment item.	X*	-					
600.7.4. Perform system restoration procedures.	X*	-					
600.8. E6AZS2E251-006, TSEC/KY-65/75 LIMITED MAINTENANCE. TR: KAO-154; KAM-330, KAM-333, and KAM-334							
600.8.1. Configure for system operation.	X*	-					
600.8.2. Perform system operation check.	X*	-					
600.8.3. Isolate faulty system equipment item.	X*	-					
600.8.4. Perform system restoration procedures.	X*	-					
600.9. E6AZS2E251-008, TSEC/KG-94/94A/194/194A LIMITED MAINTENANCE. TR: KAM-330, KAM-456, and KAM-529; SAM-153							
600.9.1. Configure for system operation.	X*	-					
600.9.2. Perform system operation check.	X*	-					
600.9.3. Isolate faulty system equipment item.	X*	-					
600.9.4. Perform system restoration procedures.	X*	-					
600.10. COMSEC QTP AOT 9401, TSEC/KG-94/94A STRAPPING. (See Note 7)	X*	-					
600.11. E6AZS2E251-009, TSEC/KGV-8/11 DEPOT MAINTENANCE. TR: MAMM-436 and MAMM-512 Vol. I & II; SAMM-83 Vol. I thru III	X*	-					
600.12. E6AZS2E251-010, TSEC/KY-71 LIMITED MAINTENANCE. TR: KAO-191; KAM-330 and KAM-429							
600.12.1. Configure for system operation.	X*	-					
600.12.2. Perform system operation check.	X*	-					
600.12.3. Isolate faulty system equipment item.	X*	-					
600.12.4. Perform system restoration procedures.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.13. E6AZS2E251-011, TSEC/CI-10 LIMITED MAINTENANCE. TR: KAM-421; SAM-8							
600.13.1. Configure for system operation.	X*	-					
600.13.2. Perform system operation check.	X*	-					
600.13.3. Isolate faulty system equipment item.	X*	-					
600.13.4. Perform system restoration procedures.	X*	-					
600.14. COMSEC QTP AFT 1001, TSEC/CI-10 STRAPPING. (See Note 7)	X*	-					
600.15. E6AZS2E251-012, TSEC/KY-68/78 LIMITED MAINTENANCE. TR: KAO-193A; KAM-330 and KAM-403A							
600.15.1. Configure for system operation.	X*	-					
600.15.2. Perform system operation check.	X*	-					
600.15.3. Isolate faulty system equipment item.	X*	-					
600.15.4. Perform system restoration procedures.	X*	-					
600.16. COMSEC QTP ART 6801, TSEC/KY-68/78 STRAPPING. (See Note 7)	X*	-					
600.17. E6AZS2E251-013, COMSEC AWARENESS TRAINING. TR: Self-contained course	X*	-					
600.18. E6AZS2E251-015, TSEC/KGR-28/KGT-7 LIMITED MAINTENANCE. TR: AFKAM-228; AFSAM-123							
600.18.1. Configure for system operation.	X*	-					
600.18.2. Perform system operation check.	X*	-					
600.18.3. Isolate faulty system equipment item.	X*	-					
600.18.4. Perform system restoration procedures.	X*	-					
600.19. E6AZS2E251-016, TSEC/KG-28/29 LIMITED MAINTENANCE. TR: KAO-135; AFSAM-23, -24B, -26, and -27; AFKAM-228 and AFKAM-229; SAM-24 and SAM-25							
600.19.1. Configure for system operation.	X*	-					
600.19.2. Perform system operation check.	X*	-					
600.19.3. Isolate faulty system equipment item.	X*	-					
600.19.4. Perform system restoration procedures.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.20. E6AZS2E251-018, TSEC/KG-83 OPERATIONAL CERTIFICATION TRAINING. TR: AFSAM-70A	X*	-					
600.21. E6AZS2E251-019, TSEC/KY-90 LIMITED MAINTENANCE. TR: KAM-330 and KAM-435A							
600.21.1. Configure for system operation.	X*	-					
600.21.2. Perform system operation check.	X*	-					
600.21.3. Isolate faulty system equipment item.	X*	-					
600.21.4. Perform system restoration procedures.	X*	-					
600.22. E6AZS2E251-020, GENERIC MICROPROCESSOR (DEPOT). TR: Self-contained course	X*	-					
600.23. E6AZS2E251-021, TRI-TAC (TTC-39/TYC-39/TTC-42) COMSEC EQUIPMENT LIMITED MAINTENANCE. TR: KAM-393A, -395A, -401A, -405B, and -407A; SAM-7A; NAM-24A Vols. I thru III							
600.23.1. Configure for system operation.	X*	-					
600.23.2. Perform system operation check.	X*	-					
600.23.3. Isolate faulty system equipment item.	X*	-					
600.23.4. Perform system restoration procedures.	X*	-					
600.24. E6AZS2E251-023, TSEC/KG-95 DEPOT MAINTENANCE. TR: LMM-12A	X*						
600.25. E6AZS2E251-027, TSEC/KI-111/112/113/KGV-112 DEPOT MAINTENANCE. TR: MAMM-506 and 507, MES 66-2-37, -38, and -39	X*	-					
600.26. E6AZS2E251-028, TSEC/KG-40A LIMITED MAINTENANCE. TR: LMM-1B							
600.26.1. Configure for system operation.	X*	-					
600.26.2. Perform system operation check.	X*	-					
600.26.3. Isolate faulty system equipment item.	X*	-					
600.26.4. Perform system restoration procedures.	X*	-					
600.27. E6AZS2E251-029, TSEC/KY-99 LIMITED MAINTENANCE. TR: LMM-9A							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.27.1. Configure for system operation.	X*	-					
600.27.2. Perform system operation check.	X*	-					
600.27.3. Isolate faulty system equipment item.	X*	-					
600.27.4. Perform system restoration procedures.	X*	-					
600.28. E6AZS2E251-032, TSEC/KG-81 DEPOT MAINTENANCE. TR: KAM-366A and KAM-367A Vol. I & II; SAM-164A; CIDOS 81	X*	-					
600.29. E6AZS2E251-033, TSEC/KG-144 DEPOT MAINTENANCE. TR: KAM-557A and KAM-330; MANUAL G941500.	X*	-					
600.30. E6AZS2E251-034, TSEC/MYK-7 DEPOT MAINTENANCE. TR: AFKAM-34; MYK-7 O & M MANUAL	X*	-					
600.31. E6AZS2E251-036, TSEC/KG-189 LIMITED MAINTENANCE. TR: LMM-8 and LMM-15; KAM-330							
600.31.1. Configure for system operation.	X*	-					
600.31.2. Perform system operation check.	X*	-					
600.31.3. Isolate faulty system equipment item.	X*	-					
600.31.4. Perform system restoration procedures.	X*	-					

**BEHAVIORAL FORMAT CTG CODING SYSTEM**

Each CTG element is written as a behavioral statement. The detail of the statement and verb selection reflects the level of training provided.

Code	Definition
K	Subject Knowledge Training - The verb selection identifies the individual's ability to identify facts, state principles, analyze, or evaluate the subject.
-	When this code is used in the OJT Upgrade Column it indicates that the certification or qualification on this task is a local determination. When this code is used in the CDC Column it indicates that no training for this subject is provided in the CDCs.
X	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level. This code indicates that training to satisfy this requirement is either provided through OJT, CDCs, or a combination of OJT and CDCs.
X*	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level if the assigned duty position is responsible to maintain/operate the equipment or system indicated as assigned by the local work center supervisor. This code indicates that training to satisfy this requirement is normally provided through OJT

**CFETP versus AFJQS task coding.** AFJQSs/AFQTPs annotated in the CFETP with an “X” denotes the AFJQS is mandatory. Within the AFJQS are individual tasks that are coded either “X” or “X\*.” If the tasks are coded “X,” they are mandatory. If coded “X\*,” they are duty position specific.

The identification blocks listed below are to be used when the trainer is other than the trainee's immediate supervisor.

<p><i>THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY</i></p> <p>Personal Data - Privacy Act of 1974</p>		
PRINTED NAME OF TRAINEE ( <i>Last, First, Middle Initial</i> )	INITIALS ( <i>Written</i> )	SSAN
<p>PRINTED NAME OF CERTIFYING OFFICIAL AND WRITTEN INITIALS</p>		
N/I	N/I	

## **PREFACE**

NOTE 1: Users are responsible for annotating technical references to identify current references pending CTG revision.

NOTE 2: Completion of AFQTP 2EXXX-201L, Work Center Manager's handbook is mandatory for upgrade to the 7-level.

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	7-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
70. DEPLOYMENT CONCEPTS.							
70.1. Deployment Plans. TR: AFI 10-201							
70.1.1. Describe the purpose of the following:							
70.1.1.1. OPLAN communications requirements.	X	-					
70.1.1.2. Time Phased Force Deployment Document (TPFDD).	X	-					
70.1.1.3. Unit readiness reporting procedures.	X	-					
70.1.1.4. Report UTC status to command authorities.	X	-					
70.2. Unit Type Code (UTC) Development and Reporting. TR: AFMAN 10-401							
70.2.1. Identify UTC development process.	X	-					
70.2.2. Identify UTC adjustment procedures.	X	-					
70.3. Deployment Procedures. TR: AFIs 10-403, 33-211; and 21-109; AFMAN 23-110							
70.3.1. Develop load plan.	X*	-					
70.3.2. Explain pallet build-up procedures.	X*	-					
70.3.3. Explain hazardous cargo preparation.	X*	-					
70.3.4. Prepare documentation.	X*	-					
70.3.5. Determine site selection requirements.	X*	-					
70.3.6. Determine site preparation requirements.	X*	-					
70.3.7. Determine site configuration requirements.	X*	-					
70.3.8. Determine requirements for constructing deployment site utility grids.	X*	-					
70.3.9. Describe control of COMSEC material.	X*	-					
71. SYSTEM PLANNING AND IMPLEMENTATION. TR: AFI 33-104 and AFI 21-404; TO 32-series; AFQTP 2EXXX-202B							
71.1. Identify systems support requirements for new or modified systems.	X	-					
71.2. Describe how to manage planning and implementation of new systems.	X	-					
72. State facts relating to the following work center management principles. (See Note 2) TR: AFQTP 2EXXX-201L							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	7-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
72.1. Principles of management.	X						
72.2. Training.	X						
72.3. Supply.	X						
72.4. Core Automated Maintenance System (CAMS).	X						
72.5. Work center management.	X						
72.6. Safety and security.	X						
72.7. Maintenance standards.	X						
72.8. Performance reports.	X						
72.9. Awards and recognition.	X						
72.10. Mobility/deployment.	X						
72.11. Manpower.	X						
72.12. Financial management.	X						
72.13 Publications management	X						

## Section B - Course Objective List

4. This section not used.

## Section C - Support Materials

5. The following is a list of available support materials.

5.1. **Computer Based Training Products.** Air Force computer based training products can be found at <http://afcbt.den.disa.mil>.

### 5.2. Air Force Job Qualification Standards and Air Force Qualification Training Packages

5.2.1. Refer to AFIND8, Numerical Index of Specialty Education/Training Publications, for the list of published AFJQSs/AFQTPs or download these products from <https://wwwmil.keesler.af.mil/81trss/qflight/welcome.html>. Refer to AFI 36-2233, *Air Force On-the-Job Training Products for Communications-Electronics Enlisted Specialty Training*, for information on how to request development of AFJQSs/AFQTPs.

5.2.2. AFJQSs/AFQTPs applicable to AFSC 2E2X1:

<b>Publication No.</b>	<b>Pseudo Code</b>	<b>Publication Title</b>
AFJQS 2E2X1-201TB	2E2X1-201.20.2.	Modular Control Equipment (Computers)
AFJQS 2E2X1-208H	2E2X1-208.8	SB3865/3614A Automatic Telephone Switchboard
AFJQS 2E2X1-208K	2E2X1-208.11.	CC2/CC2E Maintenance
AFJQS 2E2X1-208M	2E2X1-208.13	AN/FYQ-93 Joint Surveillance System (JSS)
AFJQS 2E2X1-208V	2E3X1-208.22	AN/TTC-39A(V)4 Automatic Telephone Central Office
AFJQS 2E2X1-208X	2E3X1-208.24	AN/UGC-144 Communications Terminal
AFJQS 2E2X1-208ZA	2E3X1-208.26.1	Strategic Automated Command System Maintenance
AFJQS 2EXXX-209ED	2EXXX-209.5.4	Air Force Mission Support System (AFMSS) Mission Planning Subsystem (MPS) Maintenance
AFJQS 2E3X1-209M	2E3X1-209.13	MD-674(P)/G Modem, Low Speed Wire Line
AFJQS 2E3X1-209N	2E3X1-209.14	Multichannel Crypto Controller (MC3)
AFJQS 2E3X1-209R	2E3X1-209.18	Tempest Model 40 Data Terminal
AFJQS 2E3X1-209T	2E3X1-209.20	AN/UGC-141(V) Fixed Record Communications Teletypewriter Set
AFJQS 2E3X1-209U	2E3X1-209.21	UGC-129(V)1 Teletypewriter Set (with MU-734/UGC, Magnetic Tape Unit) Organizational Maintenance
AFQTP 2EXXX-210AA	N/A	Scope Shield II User's Handbook
AFJQS 2EXXX-210AB	2EXXX-210.1.2	Scope Shield II Maintenance
AFQTP 2EXXX-210P	N/A	Sun Series Workstations Maintenance
AFJQS 2E2X1-210U	2E2X1-210.21	AN/TSQ-111 Communications Nodal Control Element
AFJQS 2E2X1-211BA	2E2X1-211.2.1	WS-133B Missile Control Communications System On-Equipment Maintenance
AFJQS 2E2X1-211BB	2E2X1-211.2.2	WS-133B Missile Control Communications System Off-Equipment Maintenance
AFJQS 2E2X1-211CA	2E2X1-211.3.1	WS-133A MCCA On-Equipment Maintenance
AFJQS 2E2X1-211CB	2E2X1-211.3.2	WS-133A MCCA Off-Equipment Maintenance (W/GSM-315)

5.2.3. Additional AFJQS/AFQTP maintenance management and generic training products applicable to this specialty.

<b><u>Publication No.</u></b>	<b><u>Pseudo Code</u></b>	<b><u>Publication Title</u></b>
AFJQS 2EXXX-200B	2EXXX-200.2	2EXXX C-E Enlisted Specialty Training
AFJQS XXXXX-200D	XXXXX-200.4	Aerospace Expeditionary Force (AEF) Qualification Training
AFJQS 2EXXX-201C	2EXXX-201.3	Corrosion Prevention and Control
AFJQS 2EXXX-201E	2EXXX-201.5	Communications-Electronics (C-E) Core Automated Maintenance System
AFJQS 2EXXX-201G	2EXXX-201.7	Maintenance Support
AFJQS 2EXXX-201H	2EXXX-201.8	Work Center Deficiency/Discrepancy Reporting
AFJQS 2EXXX-201J	2EXXX-201.10	Maintenance Training Program
AFQTP 2EXXX-201L	N/A	Communications-Electronics (C-E) Work Center Manager's Handbook
AFQTP 2EXXX-201LB	N/A	Communications-Electronic (C-E) Manager's Handbook
AFJQS 2EXXX-201P	2EXXX-201.16	Work Center Test Equipment Management
AFJQS 2E1X1-201V	2E1X1-201.22	AN/FCC-100(V) Multiplexer Set
AFJQS XXXXX-201W	XXXXX-201.23	Integrated Digital Network Exchange (IDNX-90)
AFJQS 2EXXX-201X	2EXXX-201.24	Engineering Installation (EI) Quality Assurance
AFQTP 2EXXX-202A	N/A	Electrostatic Discharge Familiarization Handbook
AFJQS 2EXXX-202B	2EXXX-202.2	SIPT Electronics and Inside Plant (E&I)
AFQTP 2EXXX-202D	N/A	EI Tempest Installation Handbook
AFJQS 300X0-202FB	N/A	Reach-All DD-140 Antenna Tower Vehicle (EI UNIT)
AFJQS 2EXXX-204N	2EXXX-204.14	AN/WCS-3(V)9 Satellite Communications Set
AFJQS 2EXXX-206Y	2EXXX-206.25	AN/GSC-42(V) AFSATCOM Terminal
AFJQS 2EXXX-211D	2EXXX-211.4	Constant Source
AFQTP 3CXXX-211RA	N/A	Computer Security (COMPUSEC) Familiarization Handbook
AFQTP 3CXXX-212B	N/A	C4 Systems Technology Handbook
AFQTP 3CXXX-213N	N/A	Automated Data Processing Equipment (ADPE) Management Handbook
AFQTP XXXXX-213T	N/A	Career Field Managers Handbook
AFJQS XXXXX-213U	XXXXX-213.21	Tactical Generator Operation for Non Power Production Personnel
AFQTP 3E0X2-213YA	N/A	Solid State Uninterruptible Power System Principles
AFJQS 3E0X2-214D	3E0X2-214.4	Stationary Battery Banks
AFJQS XXXXX-214W	XXXXX-214.23	Operation and Maintenance of Tactical Environmental Control Units (ECU) by Non-3E1X1 Personnel
AFJQS 3CXXX-229EA	3CXXX-229.5.1	Supporting Windows NT 3.5
AFJQS 3CXXX-229EB	3CXXX-229.5.2	Supporting Windows NT 3.5 Workstations
AFJQS 3CXXX-229EC	3CXXX-229.5.3	Windows NT 3.5x Advanced Troubleshooting
AFJQS 3CXXX-229FB	3CXXX-229.6.2	Windows NT 4.0 Core Tech

5.3. **Specialized Training Packages (STP).** For information on how to obtain STPs see AFI 21-109 or contact the 2E2X1 Training Manager at DSN 597-1630.

<u>Course Number</u>	<u>Course Title</u>
E6AZS2E251 000	TSEC/KG-30 Series Limited Maintenance
E6AZS2E251 001	TSEC/KG-81 Limited Maintenance
E6AZS2E251 002	TSEC/KG-84 Series Limited Maintenance
E6AZS2E251 003	TSEC/KI-1 Series Limited Maintenance
E6AZS2E251 005	TSEC/KY-57/58 Limited Maintenance
E6AZS2E251 006	TSEC/KY-65/75 Limited Maintenance
E6AZS2E251 007	TSEC/KG-84/84A/84C
E6AZS2E251 008	TSEC/KG-94/94A/194/194A Limited Maintenance
E6AZS2E251 009	SEC/KGV-8/11/ST-61 Depot Maintenance
E6AZS2E251 010	TSEC/KY-71 Limited Maintenance
E6AZS2E251 011	TSEC/CI-10 Limited Maintenance
E6AZS2E251 012	TSEC/KY-68/78 Limited Maintenance
E6AZS2E251 013	COMSEC Awareness Training
E6AZS2E251 015	TSEC/KGR-28/KGT-7/ST-19 Limited Maintenance
E6AZS2E251 016	TSEC/KG-28/29 Limited Maintenance
E6AZS2E251 018	TSEC/KG-83, KT-83 Operational Certification Training
E6AZS2E251 019	TSEC/KY-90 Limited Maintenance
E6AZS2E251 020	Generic Micro-Processor
E6AZS2E251 021	TRI-TAC COMSEC Equipment Limited Maintenance
E6AZS2E251 023	TSEC/KG-95 Series, Depot Maintenance
E6AZS2E251 027	TSEC/KG-111/112/113, KGV-112 Depot Maintenance
E6AZS2E251 028	TSEC/KG-40A Limited Maintenance
E6AZS2E251 029	TSEC/KY-99 Limited Maintenance
E6AZS2E251 032	TSEC/KG-81 Depot Maintenance
E6AZS2E251 033	TSEC/KG-144 LDU Depot Maintenance
E6AZS2E251 034	MYK-7 TDU Depot Maintenance
E6AZS2E251 036	TSEC/KG-189 Limited Maintenance
E6AZS2E251 037	TSEC/KL-51 Limited Maintenance
E6AZS2E251 038	CI-13 System Operators Course
E6AZS2E251 039	CI-13 System Administrator Course
E6AZS2E251 040	TSEC/KI-25 Limited Maintenance

5.4. **COMSEC Qualification Training Packages.** For information on how to obtain COMSEC QTPs contact the 2E2X1 Training Manager at DSN 597-1630.

<u>QTP Number</u>	<u>QTP Title</u>
ART 6801	TSEC/KY-68/78 Strapping Options
ANT 8101	TSEC/KG-81 Strapping Options
AOT 9401	TSEC/KG-94/94A Strapping Options
AFT 1001	TSEC/CI-10 Strapping Options
AMT 8401	TSEC/KG-84 Series Strapping Options

## Section D - Training Course Index

6. The following is a list of the available Air Force in-residence, field, and/or exportable training courses.

6.1. **Air Force In-Residence Courses.** For information on all formal courses, refer to the Air Force Education and Training Course Announcements (ETCA) database, formerly AFCAT 36-2223, USAF Formal Schools Catalog at <http://hq2af.keesler.af.mil/etca.htm>.

<u>Course Number</u>	<u>Course Title</u>	<u>Location</u>
E3AZP2E251 009	AN/TTC-39A(V)4 Telephone Circuit Switch Maintenance	Fort Gordon
E3AZR2E251 045	Communications Information Systems	Keesler
E3AZR2E251 048	SB-3865 Intermediate Maintenance (ULCS)	Keesler
E3AZR2E251 064	Air Force Mission Support System (AFMSS) Organizational Maintenance	Keesler
E3AZR2E251 065	AN/TYC-23 Modular Control Equipment (MCE) Computer Systems	Keesler
E4AST2E251 004	TSEC/KGR-96 Depot Maintenance	Kelly
E4AST2E251 005	TSEC/KI-36 Depot Maintenance	Kelly
E4AST2E251 007	TSEC/CI-14 Depot Maintenance	Kelly
E4AST2E251 008	TSEC/KG-66/67/KGR-66/SO-66 Depot Maintenance	Kelly
E4AST2E251 009	TSEC/KG-57, HS-57 Depot Maintenance	Kelly
E4AST2E251 010	TSEC/KI-35, ST-53 Depot Maintenance	Kelly
E4AST2E251 012	TSEC/KG-47/47A/77 Depot Maintenance	Kelly
E4AST2E251 013	TSEC/KG-46 Depot Maintenance	Kelly
E4AST2E251 014	TSEC/KG-43/44/44A Depot Maintenance	Kelly
E4AST2E251 015	TSEC/CI-1 Depot Maintenance	Kelly
E4AST2E251 019	TSEC/CI-10/ST-60 Depot Maintenance	Kelly
E4AST2E251 020	TSEC/KI-45 Depot Maintenance	Kelly
E4AST2E251 024	SEC/KG-45/ST-57 Depot Maintenance	Kelly
E4AST2E251 026	Generic Depot Maintenance	Kelly
E4AST2E251 033	SEC/KG-77 Series Depot Maintenance	Kelly
E4AST2E251 036	SEC/KG-44B Depot Maintenance	Kelly
E4AST2E251 037	YK-5/12 Depot Maintenance	Kelly
E4AST2E251 040	CI-1 Limited Maintenance	Kelly
E4AST2E251 042	CI-13 RCU Limited Maintenance	Kelly
E4AST2E251 043	TSEC/KI-23/123 Series Depot Maintenance	Kelly
E4AST2E251 044	TSEC/KOK-22 Depot Maintenance	Kelly
E5AZX2E251 002	AN/TTC-42 Intermediate Maintenance (ULCS)	29 Palms
J4AST2E2X1 037	Data Processor Display Systems Maintenance	Tinker
J4AST2E2X1 048	Line Printer RP-218/A Intermediate Maintenance	Tinker
J4ASF2E2X1 081	Data Processor/Display Systems Hands-On (E-3)	Tinker
X3AZR2E153 068	Local Area Network (LAN) and Fiber Optic Concepts	Goodfellow
X5AZA2E251 011	Spectrum High-Powered Workstation Maintenance Training	Fort Huachuca
X5AZA2E251 013	AF Tactical Receive System Maintenance	Fort Huachuca

6.2. **Air Force Engineering Technical Services (AFETS) Training.** For a listing of AFETS courses, refer to the *Catalog of Communications-Electronics Air Force Engineering and Technical Services Courses*. This catalog is revised annually and is available through your MAJCOM's C-E MATAG Working Group representative or can be downloaded from [https://www.afca.scott.af.mil/c-e\\_maint/afets.htm](https://www.afca.scott.af.mil/c-e_maint/afets.htm).

## Section E - MAJCOM Unique Requirements

7. There are currently no MAJCOM unique requirements. This area is reserved.